

THE METAL INDUSTRY

WITH WHICH ARE INCORPORATED
THE ALUMINUM WORLD, THE BRASS FOUNDER AND FINISHER AND ELECTRO-PLATERS REVIEW
A TRADE JOURNAL RELATING TO THE NON-FERROUS METALS AND ALLOYS.

OLD SERIES
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NEW SERIES
VOL. 6, No. 5.

FOUNDRYMEN'S CONVENTION AT TORONTO.

In our regular department of Associations and Societies we have presented matters of a strictly business character in connection with the convention to be held June 8 to 12, at Toronto, by the American Foundrymen's Association, the Foundry Supply Association, and the American Brass Founders' Association. On Tuesday and Wednesday,

tion to strictly convention matters. Canada is a great country in the first stages of the development of its wonderful resources, and Toronto is a beautiful city, filled with attractions. The Canadian is in no way backward in calling attention to these features, and he always stands prepared to prove the truth of his assertions. He never



PARLIAMENT BUILDINGS.
METROPOLITAN CHURCH.

TORONTO UNIVERSITY.
CITY HALL.

TORONTO—THE CONVENTION CITY.

June 9 and 10, there will also be held in Toronto the semi-annual meeting of the National Association of Brass Manufacturers. Therefore, it would be wise for all those having interests along these lines to so arrange their affairs as to be able to shape their course toward the Queen City of Canada the second week in June.

But there will be other things to see and to do in addi-

likes you to accept his statements as they are made; he would rather you would express gentle and courteous doubt, so that he may have the opportunity of thoroughly and completely convincing you—and the remarkable part of it is he invariably succeeds, and when you have seen what he has to show and heard what he has to say, you are imbued with his enthusiasm and are ready to exclaim

"the half hath not been told me." The Canadian always carries his Q. E. D. material with him, and upon the slightest provocation he will proceed with the demonstration.

But the Canadian is nothing if not hospitable; when you visit him he and his home are yours. The Canadian Committee have prepared for their guests excursions and entertainments ample enough to fill all the time, and



MACHINERY HALL, TORONTO.

varied enough to suit all tastes. The Canadian is also gallant to a degree, and has provided for the proper care of the ladies who may accompany the convention. He appreciates the fact that they do not care a rap whether vanadium improves iron or not, and they are not vitally concerned as to the best way of using phosphorus as a deoxidizer; their entertainment has been provided for in ways that are neither metallurgical nor chemical, but in some instances may be classed as both technical and classical.

A more favorable season of the year could not be

the country exhibited when first I entered the beautiful basin. Dense and trackless forests lined the margin of the lake. The wandering savage had constructed his ephemeral habitation beneath their luxuriant foliage—the group then consisted of two families of Mississaugas—and many neighboring marshes were hitherto uninvaded haunts of immense convoys of wild fowl." Its situation commended it as a convenient and safe place for the capital of the Province, and Lieut.-Col. John Graves Simcoe, the first Governor of Upper Canada, selected Toronto as the place best suited for his capital.



ST. GEORGE STREET, TORONTO.

At the beginning of the last century the town had taken form and was spreading its buildings over the fairly large area laid out. The city was incorporated in 1834, the population then being under 10,000, and the ratable property within the city limits did not exceed three-quarters of a million dollars.

At the present time Toronto is the largest and most important wholesale jobbing center of Canada, its output far surpassing that of Montreal. This is shown by the fact that more than 200 freight trains enter and leave Toronto daily.

Toronto has always been noted for its many substantial and artistic homes. It is essentially a city of homes. Larke parks of great natural beauty are found in every



PROCESS BUILDING, TORONTO.

chosen during which to visit our friends of the north. June is splendidly placed between the hot and cold, and the long twilights will be a revelation to those who have never been far to the north.

From the first the Indians recognized the importance of this site, since their heaviest trails terminate at the point. Over a century ago the Surveyor General of Lower Canada, who conducted extensive surveys on the western lakes, gave the following description of the site of Toronto: "I distinctly recollect the untamed aspect

section of the city. On the edge of Lake Ontario is Toronto Island, where, within a few minutes of the busy business section, one may find quiet and all the pleasures of shady groves, sandy beaches and moving waters.

Toronto is well supplied with educational advantages, having three large universities and several colleges. There are 57 public schools, together with industrial and technical schools.

The population is now over 300,000, occupying an area of 18½ miles. The city possesses one of the finest city

halls on the continent, and its other public buildings and churches are beautiful specimens of architecture, as may be judged from the few engravings we here present.

We deeply regret that we have not the space to describe the many pleasing and interesting things in and about Toronto. Those who attend the convention, and we know that the number will be very large, will leave Canada convinced of the greatness of Toronto, of Canada, and of the inhabitants themselves.

The headquarters for the three societies—American Foundrymen's Association, Foundry Supply Association, and the American Brass Founders' Association—will be at the King Edward Hotel, where the rates are from

PEWTER CHIPS ENTER FREE.

The claim of Knauth, Nachod & Kuhne, of New York City, that paragraph 637 of the tariff free list, relating to "pewter and britannia metal, old and fit only to be remanufactured," includes clippings or turnings of pewter, produced in the manufacture of machine bearings. They had been assessed at 20 per cent. under the provision for "metals unwrought." The Board of General Appraisers made the following statement in their decision:

"It is conceded that the turnings or clippings are in fact of pewter. The only question in dispute is whether the waste falling off in the process of the manufacture of metal articles may be regarded as old metal. Speaking



WATER FRONT, TORONTO.

\$1.50 up on the European plan, and from \$3.50 per day up on the American plan. The Associated Foundry Foremen will make their headquarters at the Palmer House, where the rates are \$2.00 per day and up, American plan.

When purchasing railroad tickets a certificate should be requested of the ticket agent, and a single ticket bought to Toronto. This certificate is to be delivered to the secretary of your association at the convention. A second

in the ordinary sense, an article is old only when by reason of age or use it has become useless or no longer serviceable for the purpose for which it was originally intended.

"In a tariff sense, however, an article may be old although not long in existence, or actually worn out by use. The pewter turnings here in question are clearly fit for no other use than to be remanufactured, and having outlived their usefulness and character as manufactured articles,



NIAGARA GORGE RAILWAY.

On the route to Toronto. Tickets of the leading railways are accepted by this line from Niagara Falls to Lewiston, where the Toronto boats land. Stop over privileges have been allowed for the return trip at Niagara Falls for 10 days, on notification to the conductor.

certificate will be returned to you, which will be good for a reduction at the railroad office when you purchase your return ticket.

they should have been classified as claimed in the protest as old pewter."

The Board of General Appraisers has decided that the provision for copper in plates not manufactured, in paragraph 532, tariff act of 1897, does not include copper plates advanced by grinding and polishing; and planished copper plates are dutiable as manufacturers of metal under paragraph 193. The plates in question had been ground and polished and in this advanced state were ready for engraving. They could not be considered as copper plates, not manufactured.

Some remarkable results of the copper boom were described by Sir P. Albert Muntz, M. P., in presiding at the meeting of Muntz's Metal Company. He stated that the rise in copper from £55 a ton to £120 had reduced their output to about half what it was before, with competition very much keener. There was hope that now copper had fallen to £60 the output would slowly recover, but so many people had abandoned the use of metals into which copper entered that this would be a slow process.

A VETERAN METAL MANAGER OF BIRMINGHAM, ENGLAND.

BIOGRAPHICAL SKETCH OF T. G. LOCKER.

METALS, MUSIC AND MASONRY.

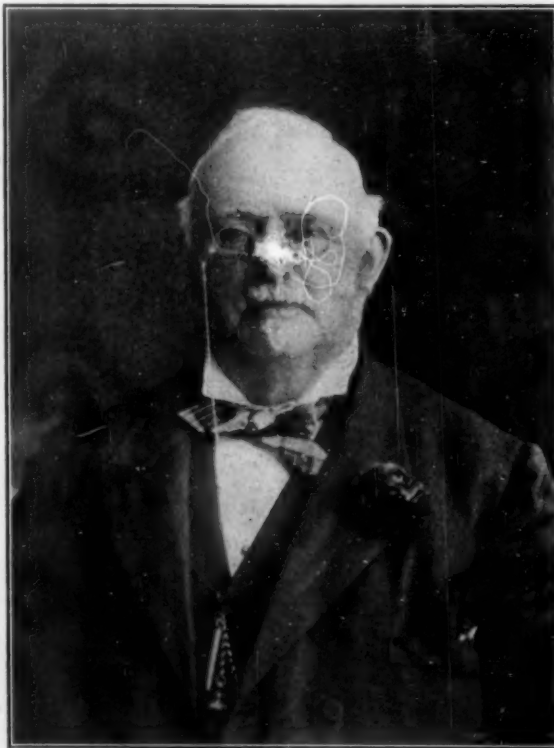
By J. HORTON.

Some time ago THE METAL INDUSTRY exhibited a picture of a famous beam engine at the establishment of Charles Clifford & Son, Ltd., Birmingham, one of the oldest concerns in the metal industry of the city. A remarkable feature about the engine exhibited was the oak beam, which had been in use continuously for 130 years. The personality of the manager, T. G. Locker, is still more interesting in its way, inasmuch as he has been continuously connected from boyhood with the firm, having nearly completed his fifty-eighth year of service. The veteran manager on the celebration on March 12th last year of his 70th birthday was buoyant and optimistic enough to invite his guests to his 80th birthday eight and a half years hence. His robust appearance and burly frame, as well as his undiminished intellectual alertness, suggest that this invitation is very far from being an act of presumption, and that the octogenarian birthday party is very likely to be held. Our readers will find further support for this expectation in the lifelike portrait which accompanies this sketch.

Mr. Locker was the son of a Birmingham workman. The latter had no educational advantages, and learnt to write after he was married, but afterwards became a good penman. Realizing the disadvantages arising from his own lack of education, Mr. Locker, Sr., was careful to give his son the best available equipment of this kind, and Thomas George Locker received his education at King Edward's School, Birmingham, and on the completion of his schooling the schoolmaster, Mr. Watton, brought him on the 17th of January, 1850, to see Mr. Clifford, who wanted an office boy. He brought with him also a recommendation from Miss Corbett, mistress of the Girls School, Gem street. He was at once engaged, began to work the next morning, and has remained there ever since. He passed from one position to another in the office until the formation of the concern into a limited liability company in 1877, when he was appointed the first secretary. Three years later Arthur Clifford, who succeeded his father in the management, had a bad attack of Russian influenza, which culminated in his becoming a complete invalid. A journey to New Zealand unfortunately proved ineffectual, and in 1890 he succumbed to the malady. This led to Mr. Locker becoming secretary and manager. On the resignation of a director shortly afterwards he came on the board as director and general manager, a position he has held for the last 17 years.

Mr. Locker was able to amplify the above brief outline with a most interesting and informing series of remi-

niscences, during the brief interview with which he favored our Birmingham correspondent. His first experience in 1850 was a tour round the works with an old engineer named Kempson, who had then been connected with the firm fully 45 years. His name appears in the wages book so far back as 1806, and though a very old man he was still a clever engineer. After showing him the wooden beam still at work, Kempson called the boy's attention to an iron beam embedded in the ground to a depth of 12 inches, which had been lying there 40 years waiting for the wooden beam to give out. As the latter still clung to life and labor the iron beam was eventually re-sold to James Watt & Co., the famous inventors of the engine, who supplied it in the first instance. The iron of that beam is described as of extraordinary quality, and the casting fetched a tip-top price at the sale.



T. G. LOCKER.

In regard to its productions the trade of the concern has changed over and over again to meet the vicissitudes of fashion and usage. In the fifties Messrs. Clifford used to roll silver and gold, the former principally for Messrs. Elkington, the famous art metal manufacturers, and the gold for the jewellers. The latter, or their representatives, always came to see the metal dealt with, keeping it under their eye continually and taking it back with them. The firm received about 15s. a bar for rolling ingot silver. One day one of those bars was stolen out of the cart, which involved a loss of about £125. Another peculiar manufacture was the rolling of thin steel for the manufacture of pens by Gilloitt's, Hinks Wells & Co., and other firms. Large quantities also used to be sent to various French firms, including Messrs. Blanzey Pouré &

Co., Sauvage le Beau & Co., both of Boulogne, and for the firm of Cuthbert, Fils et Audeval, of Paris. As a boy Mr. Locker used to address these by painting the cases, the full name, address, gross, tare, and net weights. Eventually the Frenchmen imported Birmingham workmen and produced the steel themselves.

The crinoline rage brought an enormous amount of trade in the rolling of crinoline hoop steel. In the palmy days of that industry the firm obtained £28 per ton for rolling this crinoline steel, for which there was a great demand for a time. But severe competition eventually reduced the figure to £11-10, and finally the trade fizzled out. The next venture was in the manufacture of lace metal for coffin furniture, and this was a good line until numerous competitors discovered there was money in it, and squeezed down prices below the profitable point. Millions of copper coins were rolled and stamped for

Ralph Heaton & Son, and over this department George Heaton, one of the heads of the said firm, used to visit the works to supervise the production. John Abraham, the founder of the Birmingham Small Arms Co., who then rented shopping from Mr. Charles Clifford, cut out the blanks.

Zinc sheets were another line which ran very profitably for a time, but was eventually largely captured by the Belgians, though the firm still produce a considerable quantity of zinc plates. Messrs. Clifford were the first to produce a cheap Britannia metal, consisting of a coating of tin upon lead, and in this connection there was an action for alleged infringement of patent in which the firm were successful, the Court deciding that the London firm which initiated the action had no right of exclusive possession, a man named Dobbs having early in the 19th century successfully made a similar metal.

The change in the methods of doing business can hardly be better illustrated than by the fact that fifty years ago preliminary estimates or quotations were entirely unknown. Firms generally did the work required and made their own charge. Yet in spite of the vicissitudes, business at Clifford's has grown immensely, the number of men being now about 400 as compared with from 80 to 100 fifty years ago. The Dog Pool Mills have been acquired and greatly developed. As showing the extent to which wages have advanced, Mr. Locker mentions that whereas the roller in the years 1850 to 1860 used to earn 22s. a week he now makes 45s. The annealer similarly has increased his wages from 18s. to 36s. and a third employee from 6s. to 18s.

A most interesting branch of trade was that of ship sheathing, which consisted of applying a metallic covering to wooden ships, called Muntz metal sheathing and now yellow metal sheathing. The firm had agents at London, Liverpool, South Shields, Leith, Greenock, Dublin, Plymouth and Cork, all of whom were under Mr. Locker's supervision, being regularly visited. The trade had to be given up eventually, largely owing to the conditions of the trade being all against the manufacturers, but still more because of the rascality of many of the captains, who, in returning old metal, would sometimes half fill the casks with mud, brick ends, or worthless old iron and charged for the material as old yellow metal sheathing. Sometimes the large pieces of iron got into the machinery and caused breakages. Mr. Locker's visits to the ports brought him into contact with shipowners and agents, and he recalls the fact that in one year no less than 60 wooden ships (called coffin ships), left the Tyne and were never heard of again, and this necessitated the reforms introduced by the late Mr. Plimsoll, M. P.

On one occasion Mr. Locker inquired of their agent when such and such a ship would return. The agent answered: "That ship is over-insured, and the owner don't want it to come in at all. If it comes in, it will cost £1,600 to repair, whereas if it goes down he is insured, and will receive £3,000." Mr. Locker himself has seen in one morning as many as half a dozen wrecks at the entrance to the Tyne known as the "Black Middens."

On the completion of his jubilee of continued service with the firm, on January 18, 1900, the directors and shareholders gave a complimentary dinner to Mr. Locker, when he was presented with a cabinet of silver made by the renowned firm of Elkington & Co., the staff, through the secretary, A. H. Wolsley, adding on their own behalf a silver turnover. This latter gift always occupies a place on the recipient's breakfast table. His 70th birthday was celebrated by a large gathering at the Public Hall, Erdington, when various handsome presentations were made by residents, and by Mr. Locker's Masonic brethren.

He is a past master and treasurer of the Temperance Lodge, No. 739, and is past provincial grand organist of Warwickshire.

This sketch would be altogether incomplete without some reference to the enormous amount of musical work done by Mr. Locker. Probably no other amateur in Birmingham has for the past forty years had so large a share in the musical life of the city. He comes of a musical stock; his father was the possessor of the rare gift of a male soprano voice. Mr. Locker very well remembers the old man on his deathbed remarking in reply to an inquiry: "I am very bad; I shall never again make the top A in 'And the Glory of the Lord'"—a well-known "Messiah" chorus. For many years Mr. Locker, Sr., was choir leader of the Nechells Park Road Wesleyan Chapel. For years, the boy remembers how the choirs came to his father's house to rehearse the anthems. Very early in life he himself took up the tonic-sol-fa system as the most effective method of reading music. Several friends asked him to teach them, and the meetings gradually grew until a really large choral society developed. Mr. Locker, for years, was teaching and conducting choral societies every night in the week. For thirty-five years he carried on this kind of work. He was conductor of the following societies: Acock's Green Choral Society, Camp Hill Amateur Musical Society, Sutton Choral Society, Perry Bar Choral Society, Birmingham Musical Union, Erdington Amateur Musical Society and King's Norton Choral Society. He gave any number of concerts and prepared oratorios, masses and cantatas; in fact, all the well-known works were given. To this devotion to music Mr. Locker largely attributes, as well as to his abstinence from smoking, his robust and green old age. For years a series of Saturday evening concerts were given, which were so successful that the town hall was always filled, and all the tickets were sold by Monday evening. Three complimentary concerts have been given by Mr. Locker's pupils. The Railwaymen's Orphanage, at Derby, has also benefited by three special concerts arranged by Mr. Locker, which resulted in over £1,000 being handed to that excellent institution. So long since as 1858 he sang in the Birmingham Triennial Festival.

Although at present taking little active part in music, Mr. Locker's interest in the divine art is as keen as ever.

ZINC TRUST IN GERMANY.

Consul-General Richard Guenther, of Frankfort, reports that the mine owners and producers of zinc in Germany have recently combined in a syndicate which for the next three years is to control the production of the German mines and fix the prices of the metal and by-products. The principal German metal dealers are also members of the syndicate, which purposes to make agreements with the principal zinc producers of Belgium and other countries for the protection of their common trade interests. Up to last year Germany was the largest producer of this metal, and still is the chief user of it for ordinary and artistic purposes. The United States now leads in the production of raw zinc or spelter.

The statistics furnished by the U. S. Geological Survey for 1907 show that this country produced 225,000 tons of spelter, Belgium being second with 168,000 tons, and Germany third with 150,000 tons.

The future of the aluminum industry is very bright since the metal is not only maintaining all its prestige but is finding new fields. The domestic uses of aluminum are not increasing with the rapidity at first predicted, mainly because it is too expensive for the ordinary family.

SIMPLE COST SYSTEM FOR SMALL JOBBING BRASS FOUNDRY.*

By T. H.

The close competition and low prices present in the running of a small jobbing brass foundry are not caused by trusts, neither are they due to the business methods of large firms having fine equipment, accurate accounting, and sufficient resources. The usual molder is optimistic and has a high regard for his own ability; he imagines the "boss" is making large profits; he gives the boss credit for knowing less than he really does, while he thinks he himself knows more and can do more. The consequence is he starts in business without taking into consideration the whole of the costs necessary for the turning out of work. He begins by cutting prices, principally to the customers of his old boss and any others around his neighborhood; new prices are made to hold trade and get new customers. Prices do not recover by the slow strangulation and

number of articles in the trade papers on systems of bookkeeping, until the remark is made that some concerns are system mad.

There have been many card systems, etc., explained for foundries such as the General Electric, the Harvester Company, Westinghouse, etc., and other large plants; but I have seen nothing applicable to the small jobbing brass foundry with its wonderfully mixed lot of work, from one to 500 castings of each pattern and from one to 10 molders. If a satisfactory system is known it ought to be explained, not alone for the general good but for self-interest. If your competitor actually knew his costs, his charges would be made on a living basis; if he does not know the sooner you can show him the error of his ways the better it will be for yourself.

Date	Name of Firm	CREDITS		LOSS		METALS		LABOR SUPPLY		MACH.	PROFIT	
		CASH CHECKS		DISCOUNT & ALLOWANCE		PAID		PAID		PAID	REFUNDING DIS. & ALLOW.	
Feb 1	Rent (for Month)							50 00				
	Insurance Depreciation											25 48
	E. Borne	98										
	Reliance Mfg Co	148.87	303									
	Harold & Co	4.35	276			1.59						
	Belt									96		
	Lag Screws									18		
	Car Gages							15				
	Nails								10			
	Wages							2075				
	Loss on Metal			2478								
	J. Hair (loss %)					243.71						249
	Amount to be earned											
	or Profit per											
	Week Day or Month											
		15420	3055			24530	7090	10		114		

SIMPLE COST SYSTEM FOR SMALL JOBBING BRASS FOUNDRY.

failure of the many small shops that swallow up the savings of the molder.

The chief causes of failure are reported by the mercantile agencies to be due to insufficient capital; that may be correct, but it is to remedy this lack of capital that we all start in business.

There are more failures caused by poor bookkeeping than by anything else. No amount of intuition as a business man, or ability as a workman, can make an undertaking pay if accounts are not properly kept of the cost of doing the work. Meeting cuts in prices, personal feeling against competitors causing further cuts, would, I think, be stopped if the foundryman knew exactly what it cost to run his business. There are not many who will knowingly sell under cost just for the sake of helping their customers to their own loss.

That there is an immediate necessity for better methods than are now common is shown by the large

With the hope that the readers of THE METAL INDUSTRY will take hold and criticize, in order to show us a better way out of the trouble, the following part of a system of simple bookkeeping is submitted. The small foundryman must fight out this problem himself; auditors and accountants cannot help him, for he cannot afford them, and at the best they do not seem to realize his peculiar conditions of work. I have tried the method here described, after having used various card systems, and found it most serviceable. It forms a day book and in the case of disputed accounts would be legal as a "book of original entry." If opened at the start of business for yourself, it forms, with the addition of another column for the purpose of debiting the costs of original purchases when replaced by new purchases, a perpetual inventory that can be used in case of fire loss to specify and honestly prove your claim of loss. It has many advantages compared with the old system of posting to different ledger accounts and drawing off a monthly trial balance sheet; with

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the new method you know just where you stand every day, and do not have to wait until the end of the year and then take an inventory to find out your condition. If entries are properly made you can see progress or loss at once, and if necessary take the proper steps to correct the harm.

From the first column under "Castings" the average price per pound is found by dividing the totals. In the same way the "Metal" column gives the average price after having deducted 10 per cent. for loss. The difference between the metal bought and castings shows what you should have in stock in the shape of unmelted metal, gates, or castings on hand.

Under the head of "Labor and Expense" charge rent, car fare, postage, express charges, wages, and all charges for which no merchandise has been received. The total of that divided by the pounds of castings made shows the average cost for that account.

"Supply and Fuel" includes all kinds of foundry supplies such as sand, facings, rosin, flour, renewal of

\$2,000 at rate of 2 per cent., plus 6 per cent. interest, is \$3.53 per month, which we enter together with depreciation, making \$25.60.

We charge all discounts allowed and allowances made to customers to the "Loss, Discount and Allowance" column. This column is also added to the cost per pound.

Although the "Loss" columns are chargeable to manufacturing costs, for convenience we place them with the "Cash Credits and Debits" as being handier for making entries. The payments received—credits, cash, etc.—added to the "Discount and Allowance" is the total amount collected, for comparison with the castings shipped or goods purchased. It informs you when you must push collections. The other accounts show how far you are ahead or behind in your payments; the difference between them and your cash credits, etc., show how much of a balance you have on hand, and are self-explanatory.

The only entry that may be obscure is the return of

Date	Name of Firm	Price	CASTINGS		METAL		LABOR SUPPLY'S MACH.		
			WEIGHT	PRICE	WEIGHT	PRICE	EXPENSE	FUEL	EQUIP.
Feb 1	Rent (per Day)						2.00		
	Harold Mfg Co 26		751 8	195 39					
	Ed Bone		3 4	98					
	J. Naive (Brass) 10				890	89 00			
	(Copper) 12 1/2				750	93 75			
	(Zinc) 4 1/2				200	9 00			
	(Lead) 4 1/2				210	9 45			
	(Tin) 30				150	45 00			
	R. F. Sand & Gravel							4 50	
	Nails							10	
	12 ft 3" Belt								96
	Car Fares						15		
	Lag Screws								18
	Harold & Co (Castings) 11				14.8	159			
	Wages (1 Day)						20 75		
			754 12	196 37	2214 8	247 79	22 80	4 60	114
	Loss on Metal 10%				221				
					1993 8				

SIMPLE COST SYSTEM FOR SMALL JOBBING BRASS FOUNDRY.

emery wheels, files, saws and tools. This division includes merchandise or tools that wear out rapidly and have to be replaced within a short time, wrapping paper, stationery, etc. This account is handled in the same way as labor account and charged to cost per pound of castings.

The "Machinery or Equipment" account takes in everything that is of a permanent character, including furnaces, smokestacks (if you own them), molding flasks, chairs, safes, or desks. The usual way is to write off 10 per cent. depreciation every year at inventory. We consider that it is an investment we have made which we expect to have returned to us with interest in 10 years. On a basis of \$2,000 invested, a monthly amount has got to be earned of \$22.16, which we place in our "Profit and Refunding" account as a charge against the cost per pound. The amount of money you expect to earn or make as a profit each year from the business is divided into weekly or monthly sums and entered in the "Profit and Refunding" column to be added to the cost price. For fire insurance of amount of

defective castings by Harold & Co. They return 14 1/2 pounds of castings, which they are credited with in full as a payment in cash. The entry is made of 14 1/2 pounds of metal at cost price at \$1.59 in the "Metals" account, crediting metal paid with that amount. The difference between that price and the credit to Harold & Co., \$2.76, is charged to the "Loss" account, \$1.17. In other words, defective castings are charged as new metal received and the customer is credited with an amount equal to what he would have paid if the castings had been perfect; balance to loss.

Average or minimum prices can be obtained from this system. You always know exactly where you stand in every way and without any guesswork. It enables the foundryman to know when he has reached the danger line in cutting prices in competition, and assures him a fair chance to earn a decent living for the work performed, if he is able at all to sell his product over what he finds to be his actual cost.

If he cannot get a fair price from his work then the best thing is to get out before he loses everything.

A REVELATION IN THE ART OF CASTING IN PRECIOUS METALS AND BRONZE.*

By WILLIAM L. RICKARD.

Casting in precious metals and bronze is an art so ancient, one which for so many centuries has been the life study and work of educated artisans, and which in recent years has attained so high a degree of perfection, that the possibilities of improvement appeared to be exhausted.

That the limits of progress in any line of human endeavor will never be reached until trained intellects cease their conscientious, painstaking research and experiment, was never more strongly demonstrated than by the wonderfully artistic results obtained by John Janitschek, with his recently discovered process of plaster casting, which has been protected by letters patent. It is not the purpose, nor is it within the province of the writer, to enter into a minute description of this process, but merely to give the basic materials used and to enumerate a few astonishing examples indicating the character of the work accomplished thereby.

The ingredients of this mold composition are calcined plaster (plaster of paris), anthracite coal ashes, whiting

terial in connection with the old Italian lost wax process, which cannot be done with any other plaster mixture except brick dust and plaster; and, with this latter, the results are not entirely satisfactory, as, in pouring, the hot metal roughens the surface of the mold immediately upon coming in contact with it, necessitating considerable hand finishing of the casting. The Janitschek casting



SILVER SUGAR BOWL CAST IN ONE PIECE
BY JANITSCHKE PATENT PROCESS.

and coarsely ground slag wool, these being mingled dry in proper proportions. After the pattern has been dried and thinly and evenly oiled, the above mixture is stirred into water, in which alum has previously been dissolved in such quantity as experience proved advisable, until the whole is of the consistency of thick cream. While in this state the composition is poured over the pattern to a moderate depth, and closely packed on its surface by means of a soft roller. By this operation all fine detail is thoroughly filled and air eliminated. The mold is then filled with a stiffer mixture, the surplus struck off, and the operation repeated with the other half of the pattern. This produces a mold having a fine-grained, perfectly smooth surface equal to the finest asbestos-plaster work, and far superior to it in many important respects.

Those having experience with the asbestos process are aware of the difficulties encountered in making castings by this method, the long, tedious baking of molds in gas ovens, with a gradually increasing temperature necessary to prevent crumbling, and the careful watching required during this drying period of experienced and skilled workmen. With the JANITSCHKE PROCESS, superior results are obtained, and at the same time these difficulties eliminated, as the molds may be placed in an oven under a maintained temperature high enough quickly to make them red hot without injury. This fact makes it possible successfully to use this ma-

*Those of our readers who are interested in this subject, may obtain the names of the parties controlling this process by applying to the Editor.



LOST WAX CASTING IN BRONZE FROM PLASTER
MODEL AND NATURAL LEAVES BY JANIT-
SCHEK PATENT PROCESS.

leaves the mold a finished article, with both smooth and modeled surfaces perfect, requiring no tool work afterwards.

The perfection of the work accomplished may readily be understood when bronze ornaments in high relief are cast to a thinness of twenty-six gauge, and bronze medallions containing in their design many human figures with every feature and muscle outlined with unparalleled sharpness and clearness. Scarf pin castings of the finest and most intricate designs are being made in gold, so exquisitely perfect in every detail that any attempt to chase them would only mar their beauty. Engravings are reproduced so perfectly in cast silver as to have the appearance of etched work; silver castings made of miniature Corinthian capitals; silver tea services, involved

and delicate in design, with each article cast in one piece; and silver birds, life-like to the tiniest ruffled feather.

Such perfect replicas of nature's foliage have been cast that it would be easier to believe them leaves turned to bronze by some mysterious alchemy, than that the handicraft of man produced so wonderful a result.

WALL PAPER SUBSTITUTE IN INDIA.

We take the following from the Daily Consular Reports:

Consul-General William H. Michael, writing from Calcutta, gives the following account of a damp-resisting wall covering: Much complaint has always been made



CROUCHING LIONESS—LOST WAX CASTING IN BRONZE BY JANITSCHKE PATENT PROCESS.

In bronze statuette work, the artistic possibilities of this method, when combined with the lost wax process, seem limitless. The finest lines of a sculptor's model, the

by occupants of houses in Calcutta on account of damp walls, especially in the rainy season of the year. To remedy this it is proposed to use a new kind of damp-



BRONZE ORNAMENT IN HIGH RELIEF, CAST BY JANITSCHKE PATENT PROCESS TO A THINNESS OF 26 GAUGE.

final touches that stamp it with the individuality and genius of its creator, may be imperishably preserved in bronze.

In 1906, the last year for which figures are available, Brazil imported about \$250,000 worth of gold jewelry and \$193,000 of silver jewelry, these amounts being in addition to items in which copper was the chief constituent. Of the imports of gold jewelry and jewelry classed as such, Germany sent about 58 per cent, and France about 35 per cent. In silver jewelry Germany had about two-thirds of the trade, France about one-fourth and the small balance scattered. During 1907 several representatives of American houses came into the trade and reported they had had considerable success, especially in the line of cheap jewelry. According to Consular reports, later figures are likely to show considerable returns from the United States.

proof paper, made of "raw copper," and varying in thickness from 0.0012 of an inch to 0.006. It is said to be capable of being worked into all sorts of patterns. It is claimed to be insect-proof and damp-proof, and can go six or seven years without being cleaned. It is used in the same way as wall paper. Ordinary wall paper is of little use in the damp climate of Calcutta, and the new invention holds out many inducements.

This new metallic wall covering was described and illustrated in *THE METAL INDUSTRY* of March, 1908.

The Premier diamond mine, in accordance with an agreement concluded with De Beers, will restrict its output by 18 per cent., the reduction thus effected being estimated at 30,000 karats per month. The yield of the Premier mine for the past year was 1,889,986 karats; during the latter half of the year the rate was 186,000 karats per month.

SURFACE COVERINGS TO PREVENT OXIDATION OF WHITE METALS.

We have received the following interesting question:

In the ordinary process of melting, in a kettle, pig or scrap metals of lead, tin, antimony, copper, zinc, aluminum, arsenic, bismuth and nickel, for the making of alloys of two or more of these metals, what method, other than the use of charcoal, fat, or rosin thrown upon the surface of the molten metal, is or may be employed to prevent oxidization?

When molten metal in a kettle is dipped out with a ladle, and if the body is not mixed prior to removing each ladleful, will there not be a lack of uniformity in the composition of commercial bars cast from such a body of metal so dipped out? Would not a lid covered kettle to keep the air from the molten metal, a power revolved mixer attached to a suspended shaft passing downward through the lid, and a tapping hole near the bottom of the kettle leading into a suitable spout with a screw operated plug in the hole by which to regulate and cut off the stream of metal, together with suitable smoothly operating appliances for shifting the filled molds away from, and the empty molds under, the spout, limit or lessen oxidation, insure a more uniform mixture of the metals, economize time, labor and fuel, and increase the output?—D. M. Co.

By J. L. J.

Referring to the above we would state that the use of charcoal on the surface of molten white metals is the most efficient and most generally used means of preventing loss of oxidation. A lime cover has its advocates, as it interposes between the metal and the air a non-conducting material which retains the heat and saves fuel. The objection to the lime cover is that it takes up a lot of shot metal and lessens the value of the oxides and skimmings when they are sold to the smelter.

A lid-covered kettle would not prevent oxidation unless it were air-tight and the air exhausted from the surface of the metal by a vacuum pump. The necessity of an air-tight cover could be obviated by using a moderately close fitting cover and displacing the air in it by carbonic acid or other inert gas, that would prevent oxidation.

There is no necessity of stirring molten white metals after dipping out each ladleful if the pouring is done at the proper temperature. Every white metal has two critical pouring points. An upper one, beyond which it begins to oxidize rapidly, and a lower one below which its constituents begin to separate. A mechanical stirring device would not produce uniform ingots unless a correct temperature were maintained.

The majority of white metal manufacturers prefer to make up small lots of their various alloys rather than 50- or 100-ton lots, which would be the output on which one would expect to see the appliances mentioned used. At least one manufacturer of babbitt in the East has a 50-ton babbitt kettle fitted with a mechanical stirring and mechanical pouring device. It has most of the advantages named above, but it is questionable whether the application of such appliances to babbitt kettles holding 1,500 to 3,000 pounds would meet with favor in the trade.

Reports from Oruro, Bolivia, state that Bolivian purchases of mining machinery depend on the development of the tin, silver, copper and gold mines about in the order named. The tin mines are likely to furnish the best market. The production of tin for 1907 was approximately 16,000 tons of pure tin, slightly less than the previous year. The average price was \$472 for the concentrates or \$841.90 for the metal.

ELECTRO-DEPOSITION OF IRON.

Under date of April 7, 1908, letters patent were granted to Sherard Osborn Cowper-Coles, of London, Eng., for a process of electro-deposition of iron. This patent states that it has hitherto been found impossible to obtain by electro-deposition iron articles such as tubes or sheets of a quality to render them of commercial value and at a cost to compare favorably with common methods. The chief difficulty has been due to the necessity of employing a very low current density and in obtaining iron of a quality suitable for commercial purposes. Iron deposited under ordinary conditions is porous and spongy, is difficult to anneal and has a tendency to flake off the cathode during deposition unless deposited at a very low current density, which makes the process and plant too costly for commercial purposes. The inventor states that he has discovered that iron can be deposited in a form suitable for the production of tubes, sheets and wires with a bright, smooth surface resembling that of very highly polished iron by maintaining the solution from which the iron is deposited charged with iron oxide. The following statement is taken from the patent specifications:

"In a suitable way of carrying out the invention the iron oxide is kept in suspension in the electrolyte by means of stirrers or by moving one or both of the electrodes or by any other suitable means, the effect of which is to reduce the acidity and effect a burnishing action on the iron deposited. I have obtained excellent results from a solution containing 20 per cent. of sulpho-cresylic acid saturated with iron, the current density being 100 amperes per square foot of cathode surface, the voltage 3.25 at the terminals of the iron electrodes, these being one-half inch apart and the temperature of the electrolyte 70° C. I find the temperature of the electrolyte considerably affects the quality of the iron. If it is much below 70° C. the iron becomes laminated and flakes off; if it is much above 70° C. the surface becomes covered with ridges or stream lines and cannot be used for commercial purposes without further treatment.

"The sulpho-cresylic acid above mentioned is a cresol-sulphonic acid containing approximately 108 parts cresol and 98 parts sulphuric acid. The cresol contains ortho 35 per cent. meta 40 per cent. and para 25 per cent. This cresol is heated with sulphuric acid, yielding isomeric cresol-sulphonic acids.

"It is important that none of the oxide in suspension shall be deposited on the iron, otherwise it will be worthless for commercial purposes. It is therefore advantageous in producing sheets or tubes, to slowly revolve the cathode, which may be arranged longitudinally or vertically. This also insures an equal thickness of deposit by changing the relative position of the anode and cathode. I find that the iron produced from the sulpho-cresylic solution is exceedingly hard and when it is desired to produce soft, tough iron, ferrous sulphate solution should be employed. I also find that it may be advantageous to add small quantities of carbon bisulphide from time to time to the electrolyte."

The Treasury Department's regulations establishing a rate for the allowance of drawback on thermit and nickel thermit manufactured by the Goldschmidt Thermit Company, of New York, with the use of imported aluminum, has been extended, so far as applicable, to cover granulated aluminum manufactured by the company wholly with the use of imported notched-bar ingot aluminum. The quantity of imported aluminum which may be taken as the basis for the allowance of drawback may equal the quantity declared in the drawback entry.

THE TURRET LATHE AND ITS EQUIPMENT.

BY EASY WAY.

(Continued from April issue.)

The next place the numbers or symbols can be used to advantage is in the cost keeping department. A book should be ruled; this should be a loose leaf one so that the pages can be taken out and filed when filled. It also enables the costkeeper to work to better advantage, as he can place his finger on any symbol without reference to an index, and can also insert a leaf in its proper place for any new symbol placed on an existing tracing. The leaves can be ruled, as shown in the drawing. Each page should have its own symbol marked plainly in the right hand top corner and also have a tag with the symbol on, gummed so as to project over the edge of the sheet.

Where several symbols are assembled together, if they are all on one tracing and are kept in the stockroom for

[illegible]

shipment or repair orders, they should have a leaf on the cost book giving the time of assembling and also the symbols involved, such as $\frac{1}{ABC D}$. If more than one tracing is involved in the assembling of the parts it is policy to give it a number of its own and index the tracing numbers under it, such as $\frac{1000}{1-9-10-36}$. A complete list of the different parts used in each tracing should be kept for reference, such as $\frac{1}{A B_1 D_2 \frac{10}{A} \frac{36}{B}}$. To avoid confusion in ordering repairs by outside parties, the catalogue should have a complete assembled cut of whatever is being marketed, and the symbol placed on each part which is liable to be replaced. In giving the symbol, the blue print of the particular part wanted can be located at once. Wherever the writing of the name of a part can be dispensed with in the actual manufacture of the article, it should be done and the symbol alone used, as it will save a lot of time in the course of a year.

(To be Continued.)

In 1905 the exports of polished diamonds from the Netherlands to the United States amounted to \$9,197,843; in 1906 the exports were \$11,633,352.

The year 1907 opened auspiciously and under most favorable conditions for the trade, and it was then thought that the number of diamonds that would be exported to the United States would be far in excess of any previous year, but in the month of July the American buyers began to reduce their purchases, and as the financial crisis in the United States became more acute the orders from America ceased entirely, and from the middle of August up to the end of the year the entire shipment of diamonds through this office did not exceed \$75,000, and the total exports for the year amounted to only \$7,452,604, as against \$11,633,352 for the calendar year 1906.

BI-METALLIC TUBING

The Aluminum Company of America has placed on the market several forms of bimetallic tubing, having in some cases a copper envelope on the outside with the inner shell of aluminum; in other cases having an aluminum exterior reinforced by a lining of tubular steel. The aluminum portion may be the exterior or interior of the tube, depending on the requirements of the service to which it is to be put. The union of the two metals is complete, a cross section of the tube showing a perfect contact between the outer and inner elements.

The aluminum copper tubes are primarily intended for surface condensers and have given excellent satisfaction, especially where the cooling water contains acid having a corrosive effect upon the tubes. The value of the bi-metallic feature lies in the fact that the aluminum shell of itself resists corrosive influences of the cooling water, and also by reason of its galvanic action with the copper, the aluminum being the electro-positive element in the combination. When the tubes become old and corrosion has begun to take effect, the action of the aluminum and copper is similar to that in galvanized steel plates, by which the steel is covered with a protective coating.

The success of bimetallic tubes for condenser purposes has been recently demonstrated in a surface condenser composed of 2,000 tubes, No. 16 gauge by 3/4" outside diameter, the walls of which consist of one-third copper by volume and two-thirds aluminum. None of the mem-



BI-METALLIC TUBING.

bers have given out during twelve months of continuous service. The cooling water contains sulphuric acid in sufficient quantities to render the use of brass tubes highly undesirable on account of corrosion.

Steel lined tubes have been found serviceable in replacing nickel-plated pipe for railings and ornamental work. Tubing of this description may be obtained either with a thin aluminum exterior where lightness can be sacrificed for strength, or with a comparatively heavy aluminum envelope and a thin steel inner portion where tubes of light weight are desired, but having at the same time greater stiffness than can be secured with aluminum only.

It is expected that bimetallic tubing with the aluminum element, properly placed with respect to copper and steel, will find a wide field in evaporators, digesters and other apparatus containing fluids which have a harmful effect on containers and piping made solely of copper or steel, especially, as it is practical to vary the portion of the aluminum to the reinforcing material to meet a range of conditions both as regards strength and resistance to corrosion.

The mineral output of southern Rhodesia for the year 1907 shows an all-round increase as compared with 1906. The gold output for the year amounts to \$11,157,155, an increase of \$121,320; silver, \$83,610, an increase of \$20,000; lead, \$57,975; copper, \$33,230; tungsten, \$27,235; chrome, \$115,655; antimony, \$9,625; coal, \$278,785; diamonds and precious stones, \$144,920. The value for the whole mineral output for the year was \$11,908,315. At the end of the year there were 154 producing gold mines.

LONGEST BRONZE FORGINGS.

The William Cramp & Sons' Ship & Engine Building Company, of Philadelphia, Pa., have recently made ten Parsons manganese bronze forgings $3\frac{3}{4}$ inches in diameter, 22 feet long, weighing 900 pounds each, to be used for Connecticut River sluice gates. The company believes that these are the longest bronze forgings ever made and the order was secured by the Cramp Company because a rod of this size could not be rolled by the mills and comply with the specifications. The rods were forged from billets 8 feet long, 13 inches in diameter, each billet making two forgings.

The requirements were as follows:

Tensile strength, 65,000 pounds.	Elongation in two inches, 25 per cent.
Elastic limit, 35,000 pounds.	Reduction of area, 25 per cent.

Tests of the rods were as follows:

Tensile strength, 68,550 pounds.	Elongation in two inches, $36\frac{1}{2}$ per cent.
Elastic limit, 40,500 pounds.	Reduction of area, $32\frac{1}{2}$ per cent.

THE NEW MANGANESE BRONZE COMPANY.

In the April number of THE METAL INDUSTRY we mentioned the incorporation of the American Manganese Bronze Company and gave some facts about the management and products. Further particulars are now at hand, which are that Charles R. Spare, formerly chemist at Cramps Ship Yards, Philadelphia, Pa., will be vice-president and general manager of the plant, and the company's products will take his name; viz: Spare's Manganese Bronze, Spare's White Bronze and Spare's Hydraulic Bronze. In addition the company will manufacture United States Government alloys and will specialize on marine hydraulic work and high power machinery. They will be prepared to handle castings up to 20,000 pounds each and will also do forging and rolling. Their plant will be located on the outskirts of Philadelphia on the New York Division of the Pennsylvania Railroad, post office address, Holmesburg, Pa. Work on the buildings is now under way and the company expects to be ready to produce metal about the middle of July. The works will be thoroughly up-to-date in every respect, with pneumatic tools, electric traveling crane, etc. William A. Taylor, at one time with the Cramp's Ship Yards, will be superintendent and in charge of the practical foundry work. A complete list of the officers and directors are as follows: President, U. T. Hungerford, of the U. T. Hungerford Brass & Copper Company; vice-president, Charles R. Spare; secretary and treasurer, William A. Locke. Directors, U. T. Hungerford, Charles R. Spare, William A. Locke, R. B. Baker, president Sterling Coal Company; W. S. Gray, president W. S. Gray & Co. (a chemical house of Philadelphia); R. M. Baily, president R. M. Baily & Co., of Philadelphia; R. A. Cowles, treasurer Ansonia Brass & Copper Company. William A. Locke, secretary and treasurer, has been connected with the selling end of rolling mills for many years. He will be in charge of the New York office, which is located at 99 John street. The other officers are prominent men in their respective industries.

During the last fiscal year Mexico produced gold to the value of \$17,793,000, an increase of \$78,000 over the preceding year. Silver was produced to the value of \$37,515,000; but the exports of silver aggregated \$48,597,000, which included Mexican coin to a large amount.

IMITATION GOLD SOLUTION, CALLED "KLONDIKE" OR "McKINLEY" GOLD.

By ROYAL F. CLARK.

There is a finish which is seen on lamp, urn, clock and various other trimmings which closely resembles a gold deposit. It is known as "Klondike," while "down East" it is called "McKinley" gold. It can be produced upon all metals. Spelter and other soft metals can be plated directly in the "Klondike" solution, but cast iron or steel must be copper and brass plated, then scratch brushed, or it may be coppered in a hot cyanide copper solution, bright dipped and then put into the gold bath. Another method is to bright copper in a hot solution, then put it into the gold bath.

The novelty of this finish lies in the Klondike color which is added to the brass solution.

To prepare the "color," as it will be termed—it is really this ingredient which produces the golden yellow color—take a 2-gallon crock, pour in 1 gallon of water, add 20 ounces of C. P. cyanide of potassium. Heat this over a Bunsen burner, and when the cyanide has dissolved add very slowly 8 ounces of powdered white arsenic. Add the arsenic a little at a time to avoid boiling over. Let this boil 10 to 15 minutes, stirring several times. Be careful not to inhale the fumes which arise from this boiling operation as they are very poisonous. This solution will stand about 25 degrees Baume.

When all the arsenic has been dissolved the solution is cooled and filtered. Now make an ordinary bright brass solution composed of 2 parts copper and 1 part zinc; add a small quantity of the "Klondike" color to it, with stirring. Hang some work in the bath and at the end of $\frac{1}{2}$ or $\frac{3}{4}$ of an hour take out a piece of work, rinse in cold water, then pass it quickly through a slow acting bright dip. This will bring out the golden yellow color. It is then lacquered with a transparent white lacquer.

Avoid adding too much of the color at one time; keep feeding the brass solution a little at a time. When at its best the work will have the appearance of being brass plated; the dip removes this brass color and brings out the gold.

The "Klondike" gold solution should stand 20 Baume. The writer has operated it up to 25 with excellent results. Aqua ammonia should be added from time to time to bring up the zinc, and arsenic, or "color." The voltage should be between 4 and $4\frac{1}{2}$. By careful manipulation of the voltage and solution the work can be taken out of the bath having the golden color, without dipping.

Reports from the Georgia papers have it that the assistant State Geologist had discovered large deposits of bauxite in Wilkinson County, about 30 miles east of Macon. The commercial value of the deposit has not yet been determined.

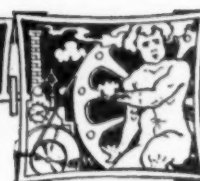
Prior to 1363, silversmiths in England stamped their work with symbolic signs, and upon very old pieces of plate may be seen the sign of the grasshopper, marigold, heart and of a water bird in a dotted circle. These symbols were discontinued in 1661.

Notable artists worked upon silver plate. Among these, Hogarth was apprenticed to a famous silversmith, Ellis Gamble, in 1712, for a period of from four to six years. Some of Hogarth's work, with his mark upon it, is still to be found. The worker's mark upon Sheffield plate is a minute sign beside the initial letters of the maker's name. At this period the style of silver most generally manufactured was plain, with "gadrooned" edges.



INDUSTRIAL

NEW AND USEFUL DEVICES, MACHINERY AND SUPPLIES OF INTEREST TO THE READERS OF THE METAL INDUSTRY.



NEW MANUFACTURING CHUCK FOR MONITOR LATHES.

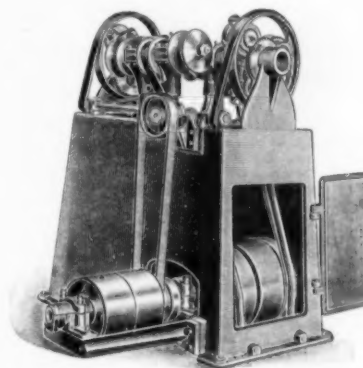
A new manufacturing chuck possessing many admirable features has been placed upon the market by W. L. Abate, 76 West Lincoln avenue, Mount Vernon, N. Y. This is an automatic two-jawed chuck, opening and closing instantaneously, by lever arrangement attached to the back end of the head stock, as shown in the engraving. The jaws will remain true during constant usage, because there is no half screw thread to wear out, on right and left screw, as there is on the ordinary two-jawed chuck. The jaws are interchangeable and can be adjusted quickly.

The chuck opens instantaneously wide enough to readily drop any machined article without the aid of one's right hand, with which one can in the meantime hold another article ready to be gripped. The chuck is so designed as to be always free and clear of chips. The sliding parts, upon which the clamping jaws are secured, are always fully in their guideway when down to grip size, no matter whether the work is large or small, thereby insuring even wear. It is stated that with this chuck a tighter and more powerful hold can be obtained than with any other two-jaw or friction chuck, and the gripping power may be increased or reduced by adjusting the regulating screws in the cam bolts, within the sliding parts.

The chuck is 7 inches in diameter and suitable for turret machines from No. 2 up. It will hold from 0 to 2 inches and more when special jaws are used. It can be furnished for use on screw machines, taking rod from 0 to $\frac{7}{8}$ inch diameter, when so ordered. It can also be equipped so that it can be operated by compressed air at about 80 pounds' pressure. Where factories are sup-

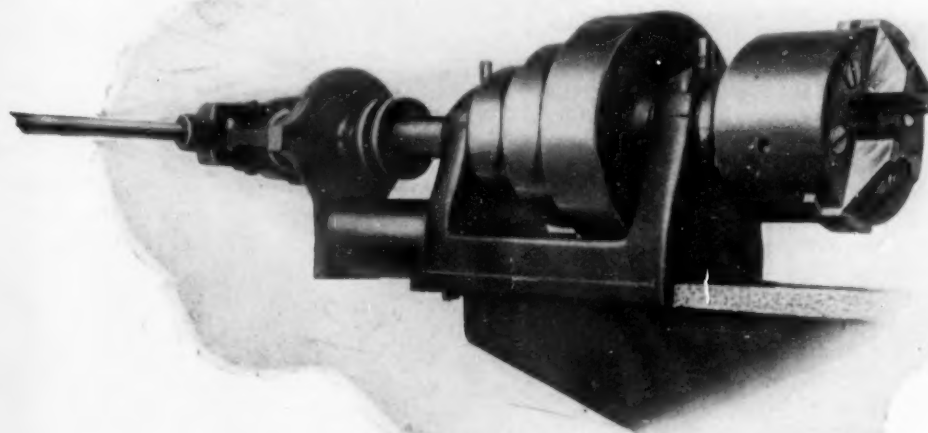
AUTOMATIC TUBE BUFFING MACHINE.

The problem of successfully buffing tube by machinery has recently been made possible by the introduction of an automatic, patented tube polishing machine by the N. Y. Tube Bending Machine Company, of Kingsland avenue, corner of Cross street, Harrison, N. J. An engraving of the machine is here presented. All sizes of tube can be handled and the necessary changes for tubes



TUBE BUFFING MACHINE.

of different diameters can be made in a few minutes. The tube is fed and revolved automatically and the buffs, of which there are five sets, can be adjusted to do any class of work desired. The tube leaves the machine either ready for lacquering or with a mat finish, as may be desired. The capacity of the machine is from 300 to 500



NEW MANUFACTURING CHUCK FOR MONITOR LATHES.

plied with compressed air this method is advised, as the operation is somewhat quicker than with the ordinary hand lever. All these chucks are guaranteed for one year against breakage caused by defective material or workmanship.

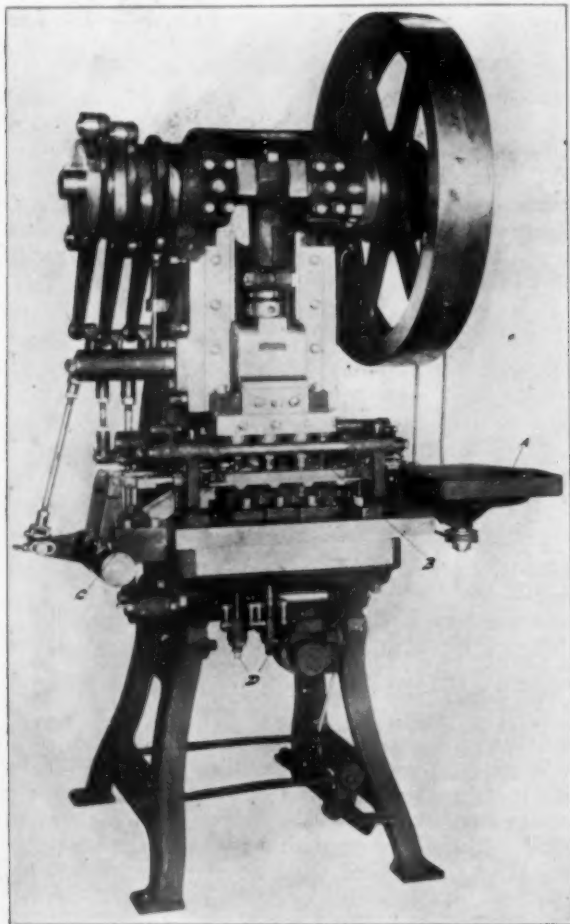
There are only three jewelry stores in San Salvador, most of the rich natives buying in New York and Paris.

feet of tube per hour according to the speed of the feed in use. The machine is simple in construction, is composed of few parts, none of which are liable to get out of order, and it can be run by an inexperienced hand.

It is estimated by leading mining experts at Johannesburg that the amount of gold still to be mined along the Rand Reef is valued at \$5,000,000,000.

THE BLISS AUTOMATIC GANG PRESS.

The half-tone in the accompanying illustration shows a new special automatic press recently built by the E. W. Bliss Co., 23 Adams street, Brooklyn, N. Y. It was designed and built for performing at each stroke simul-



BLISS AUTOMATIC GANG PRESS.

taneously, the second, third and fourth operations on shells on which the first operation of cutting and forming, or partly forming, had previously been done in another press. This type of press is especially adapted for a wide range of small articles made from sheet brass, tin, copper and aluminum.

The operation of the machine is entirely automatic. The drawn shells on which the die operations are to be performed are laid on the revolving friction dial, "A," right side up. This continually revolving dial is driven by a belt from a groove cut in the hub of the flywheel and carries the shells up to a stop from which they are automatically released, one at a time, and gripped by the lateral feed, "B," which places the shells in position under the first operation die, after which operation it carries the shell from this through the subsequent operations, finally discharging it into the chute, "C," from which it falls into a receptacle conveniently placed to receive the finished article.

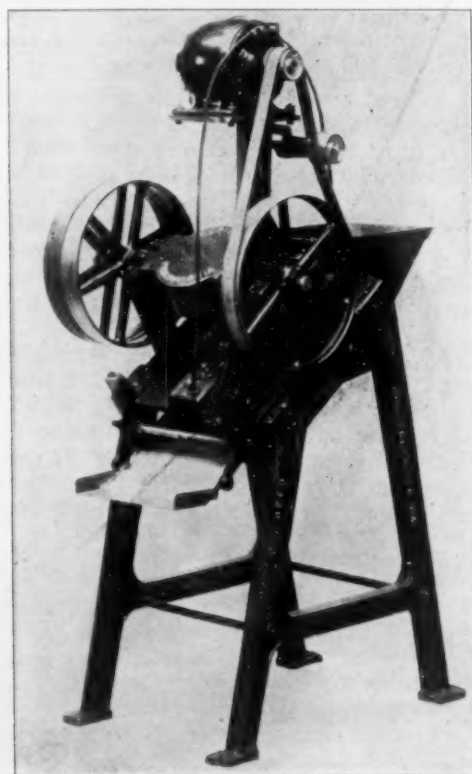
After the first three revolutions a finished blank is produced at each revolution of the press. The lateral feed is operated by means of cams on the end of the crank shaft through the medium of connecting levers and cranks shown on the side of the press. The positive knockouts, "D," for the dies, are operated in the same manner. The main slide is adjustable, allowing the use of dies for a variety of articles and providing for different heights of dies as well as allowing for wear on

same. The lateral feed is in every way adjustable. An important feature not to be overlooked is the fact that at no time is it necessary for the operator to have his hands near the dies, thus doing away with all possible danger of accident to the operator.

The press runs at the rate of 75 to 100 strokes per minute, this depending on the size and shape of the shell on which the operations are to be done, performing from 225 to 300 operations per minute, entirely eliminating the intermediate handling between operations and saving much time, labor and shop room.

THE REED MAGNETIC METAL SEPARATOR.

This machine is intended to meet all the requirements of the machine shop, foundry or metal refiner for separating iron from brass, copper, zinc and all other non-magnetic substances. It generates its own electrical energy for the electro-magnetic field and has no permanent magnets to become weak with age. This separator



REED MAGNETIC SEPARATOR.

requires only the quantity of electric energy equal to that consumed in a single 16-candle incandescent lamp.

In order to operate the separator it is only necessary to shift the belt and draw up the interrupter. If at any time any accident should happen to interrupt the magnetic field or reduce it below a certain magnetism the feed mechanism stops instantly and prevents any contamination of material already cleaned. The intensity of the magnetic field at which the interrupter acts is adjustable, as are also the position of the chute and the feed. No ammeter, voltmeter or other measuring instruments are required.

The dynamo supplied with the separator is so constructed that there is practically no sparking at the brushes or wear on the commutator. The brushes require no attention or regulation. The voltage is only 6 volts and there are no fuses to blow out or require replacing.

This machine, which is manufactured by R. Parsons & Co., Twenty-third and Hamilton streets, Philadelphia, Pa., occupies a floor space of 22 by 28 inches, is 56 inches high over all and weighs 220 pounds.

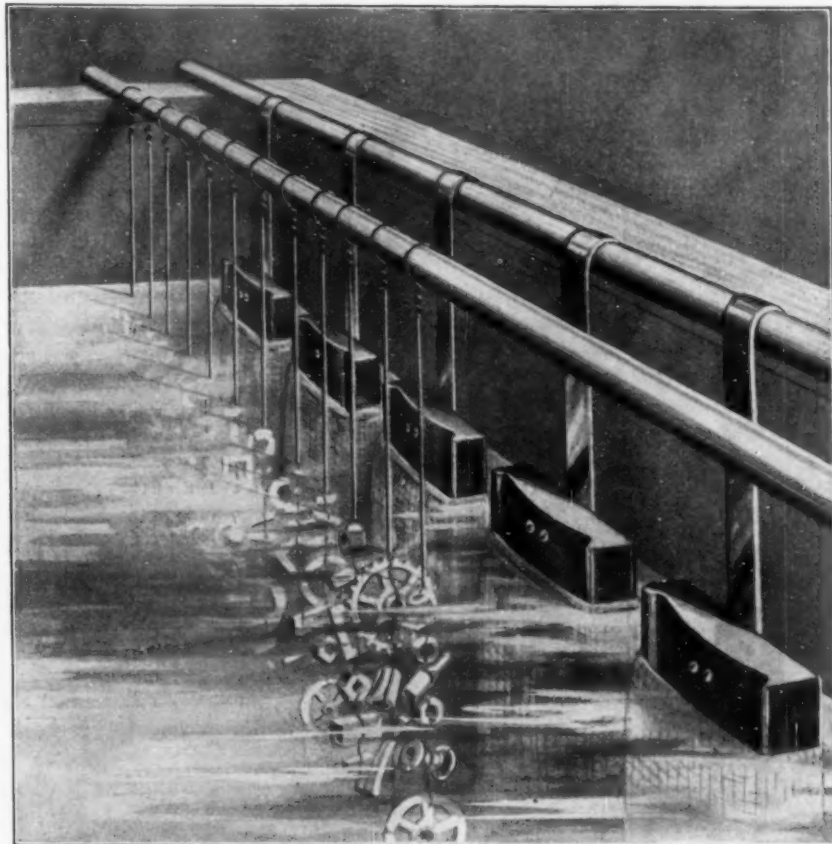
BASKET ANODES.

Anodes of the old fashioned form become reduced in size and have to be discarded long before the metal has all been used. The result is an accumulation of scrap which has to be remelted. Another disadvantage is that the character of the deposit is affected as the anode gets smaller, and the time required for doing the work is increased.

All this trouble is done away with by the basket anodes manufactured by the American Nickeloid & Manufac-

MANGANESE COPPER ALLOY FOR MANGANESE BRONZE.

By a new product of the Electric Smelting & Aluminum Company, of Lockport, N. Y., every brass founder large and small is enabled to make his own manganese bronze. Manganese bronze has been a very difficult mixture to make and to cast. The above company now furnish an alloy of manganese copper, etc., in ingots. The company announce that by adding 40 pounds of spelter to 60 pounds of this alloy any founder can make the highest grade and strongest manganese bronze, and at a con-



GROUP BASKET ANODES IN PLATING TANK.

turing Company, of Peru, Ill., which may be used to deposit metal of any kind and in any form, such as brass and copper turnings, old anode butts, grain nickel, etc. This reduces the cost both in the first product and also by reason of the absence of waste. A better and more even deposit is obtained, as the metal surface exposed is larger than with any other form of anode, and as the anodes always remain the same size. With basket anodes there is also a saving in chemicals, especially in cyanide solutions, where it is common for the metal to dissolve too rapidly. This trouble is obviated with basket anodes by using some anodes without metal or only partly filled.

These anodes are made upon a form against which the metal to be deposited is held by a burlap bag which passes completely around the form and is laced at the back. The metal put into the pocket thus formed may be in large or small pieces, as may be most convenient. For depositing brass or copper by plating machine these anodes can be used to great advantage, as they will not clog up under the strong current ordinarily employed for this purpose.

The accompanying engraving shows a large bath in which several of these anodes are suspended.

siderable saving in the usual cost of manufacture. The manganese alloy of the Electric Smelting & Aluminum Company is made from pure manganese oxide, free from iron and other impurities, and an analysis of the finished alloy shows nearly 4 per cent. of metallic manganese. The company are now selling this new alloy direct, their contract having terminated with the Ajax Metal Company, who were acting as their selling agents.

During the past year the Electric Smelting & Aluminum Company have been making a number of improvements at their plant, located on the Power Branch of the Erie Canal at Lockport, N. Y. Among the improvements are a physical laboratory, chemical laboratory, testing laboratory, besides a concentrating plant and new office. Their physical, chemical and testing laboratories are among the best in the country, being thoroughly fire-proof and having the best of equipment, besides a thorough metallurgical library, including complete bound volumes of *THE METAL INDUSTRY*. In their furnace plant the company have electric furnaces, oil furnaces, coke furnaces and are prepared to manufacture any kind of metallic mixtures, many of which cannot be produced in ordinary commercial works.



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THE METAL INDUSTRY

THE CONSOLIDATION OF
THE ALUMINUM WORLD
THE BRASS FOUNDER AND FINISHER
ELECTRO-PLATERS' REVIEW
COPPER AND BRASS

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SOCIETY VS. ASSOCIATION VS. INSTITUTE.

For several months our friends on the other side of the Large Pond have been arranging for the organization of a society to be devoted to the interests of metals other than iron—or in other words, to that large group generally known as the non-ferrous metals. In England matters metallic have always been dominated by the Iron and Steel Institute, which has all the advantages accruing from long experience and large membership; but it was thought those industries having to do with the manipulation of copper and its alloys, aluminum, silver, gold, lead, nickel, platinum, and so on through the group, should be represented by a society, or association, or institute, of their own. From the strictly commercial point of view this group was of magnitude sufficient to warrant such a course, and numerically it had ample material to support the scheme if sufficient enthusiasm could be aroused.

The movement was started by an article which appeared in *London Engineering* January last, advocating the establishment of an Association of Brass and Copper Manufacturers. The idea was instantly grasped, prominent manufacturers and metallurgists became interested, meetings were held, and the culmination will come June 10 next, when the stork will deposit its prize—and a healthy, lusty young one it promises to be.

Before going further, it may be well to outline the objects to be sought in the formation of such an organization. These were copied from those of the Iron and Steel Institute, even as our own American Brass Founders' Association looked to the constitution of the American Foundrymen's Association when stating their aims and objects.

1. To advance our knowledge of the non-ferrous metals and their alloys, more especially copper, zinc, tin, aluminum, lead, nickel, gold, silver and platinum.

2. The publication, twice a year, of a volume of abstracts of papers and books on metallurgical subjects, likely to interest the members. The volume will be a comprehensive bibliography of the practical and scientific work on non-ferrous metals of each year, both at home and abroad.

3. To afford a means of communication between members of the trades in question, bearing upon their respective manufactures, excluding all questions connected with wages and trade regulation.

4. To arrange periodical meetings for the purpose of discussing practical and scientific subjects relating to the manufacture, working-up and use of the non-ferrous metals.

The society is to be cosmopolitan in membership and not confined to Great Britain. In fact, there has already been secured the support of many leading continental

metallurgists and scientists, and it is expected that the leading manufacturers of copper and brass, and the smelters of copper, lead, spelter and allied metals will give their support.

The following discussion of the work of the society we take from the *Iron and Coal Trades' Review*:

While the formation of too many technical associations should be discouraged, there is no doubt that the copper and brass manufacturers have made out a good case for the step which they are taking. More especially is this so, as it is not proposed to limit this new Institute only to the copper and brass trades, but to include all the non-ferrous metals and their alloys. Indeed, there is at the present time no association which covers the ground which it is proposed to occupy. The Iron and Steel Institute does not profess to touch anything outside of iron and steel, and the minerals and metals used in its manufacture. These, of course, do embrace such metals as nickels, aluminum chromium, tungsten, molybdenum, and other similar metals, which are being more and more used as ferro-alloys. The Institute of Mining and Metallurgy, while it has a title which might be said to embrace the manufacture of non-ferrous metals, does not actually cover this ground at all, and practically it only includes in its membership mining engineers, and a limited number of metallurgists, while the character of the papers read and the sphere of activity of the Institute, have hitherto been almost wholly confined to mining subjects, and it is hardly likely that the Council will consider that their ground is being trespassed upon to any material extent by the new organization.

It is a great pity that in this country the practical side of metallurgy is very largely neglected. The responsibility for this, however, can only after all be partly placed on the shoulders of the councils of the various technical associations. Papers are forthcoming in large numbers from college professors, but it is only occasionally that the suggestions made in these papers can be applied by the practical man. What is required is that the practical men should come forward in greater numbers and offer the results of their experience, the full discussion of which would, without doubt, render as much service to the author as to the listener.

As regards the manufacture of non-ferrous metals we are afraid that the Council of the new Institute will have some difficulties to contend with. They wisely propose to exclude all questions connected with wages and trade regulation. In other words, the scope will be a purely technical one. Our knowledge of those engaged in trades embraced by the new organization leads us to suspect that they are no more anxious to give the benefit of their experiences to their fellow-workers, and in some cases competitors, than are those engaged in the iron and steel trades. There can be no doubt that if the papers are forthcoming in a sufficient number, the new Institute will have a wide field before it, and its labors cannot fail to greatly benefit the trades which it will represent. In any case, the founders are to be congratulated on their enterprise in taking a step which can only tend to the diffusion of knowledge and to the stimulation of scientific research.

That last paragraph is worth reading twice, for the conditions there described do not differ widely from those obtaining in this country. Mighty few American manufacturers are wildly anxious to publish a trade process which has a money-making value just for the sake of their rivals; under these conditions they are not strenuously philanthropic. As being pertinent to this question we take the following from the *Birmingham Daily Post*:

The promoters of the scheme aim at disseminating the sum experience of the manufacturers more freely than is possible at present, and expect the Institute to provide something in the nature of a practical post-graduate course in the works for those who have been well-grounded in the theory of the trade at the technical schools and universities in our great towns. The chief difficulty in the way of making the Institute meet a practical need appears to be the thorny question of trade secrets, which are as jealously guarded in the copper and brass industry as in any other branch of our native trade. So long as manufacturers debar their employees from reading papers and refusing to allow visitors to go through their works it is felt that an institute of this kind could be of little value, but so keenly has the project been taken up in Birmingham, Manchester, and London by leading firms that it is hoped a compromise will be effected on this point before the all-important June meeting.

We must confess that we could never understand why any manufacturer, having discovered a profitable process or method, should be expected to present it to the public. To him it is a cash asset, and he would be just as fair to himself if he donated a portion of his capital to the general public—and in either instance he would be relegated to the foolish class.

But the promoters of the scheme early ran upon a snag; they could not find a name that would fit all the aspects of the occasion. On this point *The Ironmonger* has this to say:

The name which has now been adopted is, we think, well chosen. The first suggestion, "Copper and Brass Institute," besides sounding somewhat clumsy and trivial, was not sufficiently descriptive when it had been decided to deal with all metals except iron and steel. "Institute of Non-ferrous Metals," although more accurate, looked just a trifle pedantic. It would appear to be the intention of the promoters of the new society to hold half-yearly conferences, and it may be taken for granted that these will be arranged so as not to clash with the meetings of the older organization.

Perhaps our own Brass Founders' Association may find some food for thought in the above. The name does not express the intention of the association. The word "Brass" covers and includes a multitude of things of a brassy nature, but it cannot, by any stretch of the imagination, be made to mean those metals, which are in no possible way connected with copper or its alloys. The English society has selected the words "Metals" and "Institute." Every day, in the trade, "Metals" is becoming more strongly associated with all metals not iron or steel; it is attaining a non-ferrous significance.

We have used the word "Founders," and by that action have limited the meaning to one single stage in the long line of manufacturing and developing processes. This name has undoubtedly restricted and confined the scope of the association. "Brass" limits the field to one metal; "Founders" obliterates all work preliminary to the foundry stage, and ignores all subsequent work.

The new society has adopted "Institute"; we have "Association"; much can be said in favor of both. On this side of the Atlantic we have not taken kindly to "Institute" as a part of the name of our societies—we believe there are but two using it—yet, when we think of the real meaning of the word perhaps it is not so inappropriate.

CRITICISM AND COMMENT

WE CORDIALLY INVITE READERS' OPINIONS AND CRITICISMS OF ALL ARTICLES
PUBLISHED IN THE METAL INDUSTRY. SUGGESTIONS WELCOME.

YELLOW MAT FINISH.

To the Editor of THE METAL INDUSTRY:

We are anxious to learn what method the brass founders in the United States adopt to secure the peculiar yellow mat finish which characterizes certain grades of cocks and injector bodies and other castings made in brass. We were under the impression that a 10 per cent. hydrofluoric acid pickle would produce the desired result, but experiments have not confirmed this view.

EDITOR THE IRONMONGER.

London, Eng., March 21, 1908.

[In the United States the mat finish on injectors, cocks and the like is produced in the following manner: The castings are pickled in a solution of hydrofluoric acid, 1 part; water, 3 parts. This is the standard pickle and will clean the work from all sand, etc., in three or four hours. Then wash in clean water and give the regulation bright dip of equal parts nitric and sulphuric acids, with a tablespoonful of common salt to each five gallons. Rinse thoroughly in clean, cold water and dry in very hot water; then swing the work to throw off all the water. If parts are to be machined or finished it should be done after pickling. The above procedure will bring out the fine yellow mat desired; this surface is on the castings when they come from the foundry and it only requires bringing out.—Editor.]

OXIDIZE FOR SILVER.

To the Editor of THE METAL INDUSTRY:

The following is the formula for the finest blue black I ever used:

Sulphuret of potassium	4 ozs.
Hyposulphite of soda	2 "
Double salts of nickel	4 "
Water	1 gal.

It will stand a scratch brush finish and also color buffing. I have used it on coffin trimmings with excellent results.
April 28, 1908. W. F. BAILEY.

ZINC DUST VS. ZINC VAPOR IN GALVANIZING.

To the Editor of THE METAL INDUSTRY:

Mr. Sang has been kind enough to send me a copy of his reply to my letter which appeared in your issue of March.

I think anybody on reading Mr. Sang's patent and then reading my Sherardizing patent cannot help coming to the conclusion that Mr. Sang's patent is based on my patent and that the only difference he can claim is that he does not bring the zinc dust in contact with the articles to be zinc coated. Such a modification was tried in my laboratories when experimenting with the Sherardizing process in the year 1900 and it was well known to those who had the negotiating of the sale of this patent in America that such experiments had been made.

I remain,

SHERARD COWPER COLES.

London, England, April 22, 1908.

[The communication of Mr. Sang, referred to above, appeared in our issue of April, page 128. In the same issue, page 119, we presented a very complete description,

cently by Mr. Sang. This extract from the patent specifications is so complete that it will be possible for those conversant with this process of galvanizing to form a conclusion respecting the merits of the two inventions.—Ed.]

NEW BOOKS.

THE SCHWARTZ METAL MELTING AND REFINING FURNACES, using crude oil, fuel oil, or gas for fuel, and which require no crucibles, are fully described and their advantages pointed out in a large and very handsomely gotten up catalogue just issued by the makers, the Hawley Down Draft Furnace Co., of Chicago, Ill. What this furnace will accomplish is mentioned in the following: "The Hawley (Schwartz) furnace is, in reality, the keystone of the entire metal industry, as the design of the furnace and its availability in regard to the economy of fuel consumption, economy in heat consumption, efficiency of heat utilization, economy in metal shrinkage, economy in device for operating during melting and finally the economy in heat after melting, in the utilization directly of the metal in the mold, all of which is a matter of prime importance in the metal field." This system consists of a special furnace having a high radiating roof and deep bowl in which brass, bronze aluminum, copper, gray iron and malleable iron can be melted and refined economically.

This book is sharply separated from the ordinary catalogue inasmuch as it contains a great mass of information of the utmost value to those having to do with the mixing and melting of metals. Among others we note several pages devoted to the composition of anti-friction metals, mixtures for locomotive engineers' castings, special phosphor bronze for slide valves, brass founders' alloys, admiralty alloys, mixtures for copper smiths' brasswork, mixtures for ornamental brasswork in white and gold, phosphor bronze alloys, manganese bronze alloys, aluminum brass, type metal, white metals, fusible metals and solders, mixtures for general engineers' castings, mixtures for marine engineers' castings, brazing solder, aluminum alloys, tin and copper alloys, analyses of metals, etc.

Antedating the year 1742, when Thomas Bolsover discovered the process of coating copper and other base metals with silver, Sheffield plate was of pure silver, and certain varieties of it always continued to be made of the pure metal. The copper alloy, however, is so good that it has stood nearly two centuries of use without any of the copper showing through, while all the Sheffield plate, made by overlaying plate of silver upon those of copper is more valuable to-day than modern articles of pure silver. When one uses the term Sheffield plate, one generally means the copper alloy overlaid with silver, but the collector seeks silver pieces of the Sheffield brand as well. All old Sheffield ware is stamped, while the modern ware is not, and new Sheffield articles are now being made from old dies, with so thin a layer of silver over the copper as to make them of little service and of no value to the collector.—The Circle.



CORRESPONDENCE

IN THIS DEPARTMENT WE WILL ANSWER QUESTIONS RELATING TO THE NON-FERROUS METALS AND ALLOYS. ADDRESS THE METAL INDUSTRY, 61 BEEKMAN STREET, NEW YORK.



METALLURGICAL.

Q.—Kindly tell me of an alloy which will flow like lead and which I can use as a backing on stamped copper goods.

A.—For your purpose an alloy consisting of
 Lead 90 parts
 Tin 5 "
 Antimony 5 "
 A cheaper alloy containing
 Lead 90 parts
 Antimony 10 "

can also be used. The usual soldering flux should be used upon the copper surface before applying the molten alloy.—C. P.

Q.—Will you publish a mixture for chandelier cocks which will turn freely and when dipped will give a bright yellow effect? At present we are using a mixture of

Copper 1 lb.
 Zinc 12 ozs.
 Lead 1/8 oz.

which does not turn freely or give the desired color when dipped.

A.—Reduced to a percentage basis, the above mixture gives

Copper 56.87
 Zinc 42.66
 Lead 0.47

The amount of lead used is hardly enough to affect the turning qualities of the alloy. The amount of zinc is very large, the formula being almost that of manganese bronze, minus the manganese and aluminum. If it is desired to continue the use of this mixture, the addition of 1/8 pound of aluminum to each 100 pounds of the mixture will improve it if the lead is omitted. We recommend, however, the following mixture for this work:

Copper 72
 Zinc 24
 Lead 2
 Tin 2

J. L. J.

Q.—The writer would like to know how manganese brass borings can be detected. Please go into this matter as deeply as possible as the writer wishes to know all the ways in which they can be detected.

A.—When manganese brass (or bronze as it is usually called) is first cast it has a beautiful golden color and turnings or borings have the same color when first made. After exposure to the air for some time, it is then difficult to distinguish them from composition. The turnings are usually tougher and longer than brass turnings, but this is not always the case. The only satisfactory way to detect manganese brass borings without sending them to a chemist is to melt about twenty-five pounds of them in a crucible and pour into a casting. If the casting is black and the metal has a high shrinkage you may safely conclude that it is manganese brass and that it will spoil nearly every mixture into which you can put it.—J. L. J.

Q.—Kindly give me a receipt for making plaster paris molds wherein I can cast such metals as brass, zinc, white metal, etc.

A.—Two parts of plaster to one part of brick dust makes a good mold.—D. J. L.

Q.—(1)—In tinning malleable castings we have been unable to finish the articles so as to retain the lustre they have when first drawn from the tin pot. Please advise us as to what method to pursue to get a good bright finish? (2)—Do you know of any metal which, when added to tin, will turn out smoother and brighter work and use less tin?

A.—(1)—The lack of brightness in the tinned malleable iron castings may be due to impure tin containing lead, etc. Only Straits tin should be used for tinning. (2)—The addition of 1 ounce of 5 per cent. phosphor-tin to each 100 pounds of pure tin is said to make the work smoother and to require the use of less tin. "Galvanizing and Tinning," by W. F. Flanders, which we can send you for \$2, will doubtless help you very much.—J. L. J.

Q.—What mixture is used for steam metal? I would also like an inexpensive formula for globe valves.

A.—Standard steam metal consists of copper 88, tin 10 and zinc 2. A great many makers of globe valves use the ordinary red ingot furnished by the junk men. Try the following:

Copper 80
 Tin 2
 Zinc 17
 Lead 1

This is something better.—J. L. J.

Q.—I would like to know if there is any way of removing the copper from a tin-lead-antimony and 2 per cent. copper mixture without destroying the properties of the other components.

A.—The copper may be removed from the above mixture by melting at a very low heat in an iron kettle and lifting off the crusts of copper and antimony that form, but the process is very wasteful. A better plan is to sweat out the tin and lead in a reverberatory sweating furnace built with a sloping hearth.—J. L. J.

Q.—I would like to be informed of a process for lead casting. The lead must be very fusible and it should also be brittle as the molds for casting are very small.

A.—In answer to this we would advise that a mixture of lead 93, antimony 5, and tin 2, is often used for making "lead castings." The Hoyt Metal Company's star casting alloy will be found satisfactory for such castings. If the molds are smoked occasionally no paste will be required.—J. L. J.

Q.—We desire a low-point fusing alloy made without mercury—one that will fuse at 160 degrees or preferably at 150, if possible.

A.—We send you a sample of one of the most satisfactory metals of this kind, but it does not have as low a

melting point as is claimed for it; viz., 150 degrees F. If you prepare your alloys by using finely divided tin, lead, bismuth and cadmium, and mix them thoroughly, then melt under a neutral mineral oil of fairly high flashing point, you will come as near getting 150 degrees as is possible. Would your apparatus admit of using metallic potassium in sealed glass tubes?—J. L. J.

MECHANICAL

Q.—The following query has been received from an English concern: We are desirous of adopting an improved method of scouring up the surfaces of sheet mill rolls while the rolls are in position. Apparently the only method used in this country is that of scouring the rolls with a wedge-shaped stick covered with emery powder and oil. The method is not satisfactory, in as much as where small pin holes occur the emery has a tendency to drag this hole into a tail, which in turn leaves its impression on the sheet.

A.—We would say that, as far as we know, there has not yet been a satisfactory portable grinding arrangement devised which can be attached to the roll housing for regrinding sheet metal rolls in position. The method you follow is the same as is employed in all the American brass mills up to date.—A. W. L.

CHEMICAL

Q.—(1)—Please tell me where I can buy a small quantity of copper bronze and a pure white varnish. (2)—Would a 10-gallon copper bath be large enough to give good results on a small article I am experimenting with?

A.—(1)—Copper bronze powder, as well as the varnish can be purchased at any reliable paint store. Transparent Jap-a-Lac varnish would answer your purpose.

(2)—A 10-gallon copper bath should prove satisfactory for experimental purposes on small articles.—C. P.

Q.—(1)—We would like a receipt for tinning and also (2) brass plating on steel.

A.—(1)—For electro tinning small pieces of steel use a hot solution consisting of 8 ounces of cream of tartar and 2 ounces tin crystals to each gallon of water; use anodes of pure tin and a fairly strong current of 4 to 5 volts. (2)—For a brass bath dissolve $2\frac{1}{2}$ ounces carbonate of copper and $\frac{3}{4}$ ounce carbonate of zinc in $\frac{1}{2}$ gallon of water to which is added 7 ounces cyanide of potassium. In another $\frac{1}{2}$ gallon of water dissolve 2 ounces bisulphite of soda and 1 ounce carbonate of soda. Then mix the two solutions. If the brass color is reddish add a little water ammonia to the bath in the proportion of $\frac{1}{2}$ ounce to the gallon. Use anodes of yellow brass and a current strength as previously mentioned.—C. P.

Q.—Can basket work be electro-galvanized, and how?

A.—By placing a revolving basket in your galvanizing bath, with the proper contacts, increasing the density of the solution and also the voltage. At least 10 volts is necessary for successful electro-galvanizing by the mechanical or basket method.—C. P.

Q.—(1) Under separate cover we are mailing you a ring and we ask you to give us a formula for obtaining that finish. (2) Also we would like a good yellow solution.

A.—(1) To produce the finish upon brass as per sample proceed as follows: Polish the rings to a cut-down finish; then cleanse in the usual manner and plate in a bronze bath, or in a regular brass bath with a slight excess of copper to produce a reddish tone. A 5-minute deposit will be sufficient; remove and lightly scratch brush. Now prepare a concentrated solution consisting of 4 ounces caustic soda, $\frac{1}{2}$ ounce or a little more to each gallon of cold water. Now immerse your scratch brushed articles in the dilute solution for a few seconds; remove, wash and dry out in the regular manner. Rebrush dry to produce a slight lustre, then lacquer by brushing or dipping. (2) Regarding yellow solution we presume you refer to a yellow brass solution. The most satisfactory method of producing a good brass solution is first to produce a copper bath and when this is in working condition change to a brass bath. To do this proceed as follows: Dissolve in 1 gallon of warm water, 6 ounces cyanide of potassium, 3 ounces carbonate of copper, 3 ounces bisulphate of soda and 2 ounces sal soda. These proportions should give you a good copper bath. Work the solution for a short time to electrolyze the bath; then dissolve carbonate of zinc in solution of cyanide of potassium, using equal proportions of each by weight, dissolved in as little water as possible. Add to the copper bath in proportion of $\frac{1}{2}$ ounce carbonate of zinc to each gallon. Afterward add 1 ounce aqua ammonia to each gallon of solution.—C. P.

Q.—We are having some difficulty nickel plating zinc which we wish to do without first copper plating.

A.—It is necessary to have a special nickel solution for successful depositing upon zinc. The following formula produces excellent results:

Nickel sulphate	10½ ozs.
Potassium citrate	17 "
Ammonium chloride	10½ "
Water	1 gal.

For further information on this subject see article entitled, Nickel Plating Articles of Zinc, in THE METAL INDUSTRY, of September, 1907, page 268.—C. P.

Q.—I am having trouble with my verde antique. While I have followed directions I do not have much success. We make a line of soft metal goods and would like a good verde solution.

A.—The formulas given in THE METAL INDUSTRY for verde antique have given good results especially upon soft metal, and when made up in quantities and used for immersion purposes last for a long time without much trouble. As a rule it is only necessary to add a little concentrated solution of sulphate of copper to them when the color of the verde is too bluish green. Try the following, but do not use any heat in the drying operations. The articles should be coppered and oxidized in the usual manner and stippled at least twice to produce good results after the first immersion.

Chloride of zinc	8 ozs.
Sulphate of copper	4 "
Sal ammoniac	4 "
Glycerine	$\frac{1}{2}$ "
Water	1 gal.

Use the solution cold.—C. P.

Q.—I want to find a black plating that will wear well on a garment hook which has a joint so that a Japan cannot be used. An electroplate would be preferred.

A.—You do not name the metal of which the hooks are

made. If they are brass the ammonia copper solution can be used. If iron or steel, copper plate in cyanide of copper bath, then oxidize in liver of sulphur solution, and afterward lacquer.—C. P.

Q.—We send you a few hatpin tops which we desire to finish in French gray; please tell us how to do it.

A.—The sample hatpin in French gray was finished in the following manner. Silver plate in the usual way, or if you have a nickel solution it could be plated for 5 minutes in that and then 5 minutes in the silver bath. Afterward remove and wash and immerse in a boiling hot solution of liver of sulphur, using 2 ounces to the gallon. This will give you the oxidized effect. Then relieve with the aid of a small tampico brush similar to those used by jewelers. These are about 2 or 3 inches in diameter and $\frac{1}{2}$ inch wide. They should run about 1,200 revolutions per minute. Use for scouring the oxidize from the relief part finely powdered pumice stone mixed with a little common flour and water. Keep the brush moist and apply a little of the pumice and flour and rub the articles across the brush. Dry out and lacquer by dipping.—C. P.

Q.—I wish to plate blue nickel on steel and iron. Not in color of black or gun metal, but real blue nickel.

A.—There is no such deposit as blue nickel. You can produce a blue color after first depositing a thin coat of nickel as follows: Nickel your articles of iron or steel in the regular manner, then repolish to get a fairly good lustre. Then prepare a solution consisting of 4 ounces hyposulphite of soda and 1 ounce of lead acetate in each gallon of water. The solution should be used near the boiling temperature. A few seconds immersion will give a good blue; wash and dry in the common manner; then lacquer by dipping or brushing.—C. P.

Q.—Kindly inform me what will stop cyanide spots from oozing out. There is prussic acid in my silver solution.

A.—Upon examination of the sample we note that in the neck, near the base, the deposit is full of small cracks. This must have occurred in the firing process and during the depositing the cyanide must have worked underneath. All cyanide solutions that become impregnated in the pores or fissures will eventually work to the surface, let the articles be washed and dried as they may. The only satisfactory method would be to place them in an airtight receptacle and create a vacuum with a small air pump. This would bring the cyanide solution to the surface and no further trouble would ensue; or the articles might be boiled out in a cream of tartar solution, using about 2 ounces to the gallon; this would probably prove effective by neutralizing the free cyanide.—C. P.

Q.—Kindly let me know how the piece of metal enclosed has been colored? Is it possible to make this finish on cast iron?

A.—The sample has been colored in the following manner: Copper plate the articles in a good cyanide bath, then scratch brush. Now prepare a solution of acetate of copper about 4 ounces to the gallon of water; use this quite warm. Immerse the articles for a few seconds; remove, wash and dry out. Then scratch brush lightly. Give the articles a second immersion, dry out without further brushing and lacquer by dipping. Now prepare a dark olive green by dissolving chrome green, yellow

and lamp black in turpentine, adding a little turpentine copal varnish as a binder, and apply very thinly with a soft brush. Place on the lacquer heater for a few minutes to dry, and then relieve the high lights with soft rags moistened with equal parts of turpentine and boiled linseed oil. Afterward place upon the heater again for a short time. This method may be used upon any metal which has been copper plated.—C. P.

Q.—Will you give me a formula for oxidizing, with one solution, brass and copper, direct, or give me a separate formula for solution that will oxidize both metals the same color, black. We do quite a good deal of chandelier work.

A.—You will probably obtain better results in oxidizing brass and copper to use an electro depositing bath. For your purpose prepare a solution as follows:

Caustic soda	25 ozs.
White arsenic	50 "
Cyanide of potassium	3 "
Hot water	5 gals.

When cold the solution is ready for work. Use anodes of soft sheet iron. The articles should be polished and cleaned in the regular manner. A good black can be obtained in 2 or 3 minutes. For antique work relieve with soft tampico brush and powdered pumice stone mixed with water.—C. P.

Q.—We send you two samples of suit case catches which are ready for brass plating. After plating we find the spring inside cracks in two. We thought this might be due to the pickling, so we cut that out; the trouble was still there.

A.—Your trouble is due to an excess of cyanide of potassium in your brass bath. You are no doubt aware that cyanide is used in hardening steel, and one of the peculiarities of cyanide, under the action of the electric current, is to produce a still harder and more brittle effect upon spring steel. We would advise you to add at least 3 to 4 ounces of carbonate of soda to your brass bath; this will overcome the action of the cyanide upon the springs. It is advisable to run your solution as low in free cyanide as possible, even at the expense of a larger electromotive force.—C. P.

Q.—I enclose a brass metal cap which has been nickel plated. You will notice it is badly pitted. The surface of the cap was perfectly smooth before it was plated, but after being in a plating solution one hour, composed of double salts of nickel with 1 ounce of C. P. boracic acid to the gallon, strength between 6 and 7 hydrometer, solution neutral, operated with a voltage of from 2 to 3, we found this difficulty.

A.—Your solution is evidently low in metal; usually when this is the case a very copious evolution of hydrogen gas appears upon the surface of the objects when plating. If this is not removed by occasionally vibrating the cathode pole the gas, in a sense, burns holes in the deposit and instead of rising to the surface of the bath it remains clinging to the surface of the articles. We would advise you to add at least 2 ounces of single sulphate of nickel to your bath. If you find this improves the surface, a little more may be added. This will increase the metal content without the addition of the ammonia salts. Dissolve in boiling water. The single sulphate dissolves very freely and a concentrated solution may be easily obtained.—C. P.



Associations and Societies

REPORTS OF THE PROCEEDINGS OF THE METAL TRADES ORGANIZATIONS.



FOUNDRY SUPPLY ASSOCIATION.—President E. H. Mumford, E. H. Mumford Co., Philadelphia, Pa.; treasurer, J. S. McCormick, J. S. McCormick Co., Pittsburg, Pa.; secretary, H. M. Lane, 1924 Prospect avenue, Cleveland, O.

TORONTO CONVENTION.

The following is a list of those who have already taken space at the convention. This should not be taken as representing all those who will present exhibits, since, at this writing, the convention is several weeks off, and many more may be expected to enter before the opening. Herewith we present plans of the exhibition buildings, and elsewhere in this issue we have presented half-tones of the buildings:

THE OSBORN MFG. CO. expect to exhibit brushes and other foundry supplies. They will have some wire brushes in operation cleaning castings.

THE BUFFALO FORGE CO. will have on exhibition an exhaust fan removing the dust from the polishing wheels in the space of the Osborn Mfg. Co.

W. W. SLY will have an exhibit of tumbling mills and similar equipment.

THE MITCHELL-PARKS MFG. CO., together with their agents, A. Buch's Sons, and The Ontario Wind Engine Co., will have an exhibit of molding machines.

JOS. DIXON CRUCIBLE CO. will exhibit crucibles.

CALUMET ENGINEERING CO. will show cupolas and equipment.

THE ARCADE MFG. CO. will show molding machines.

THE KILLING MOLDING MACHINE CO. will show molding machines.

THE CHICAGO PNEUMATIC TOOL CO., together with their agents, N. J. Holden Company, will exhibit an air compressor and pneumatic tools of all kinds.

The other two spaces in the building are under option by other firms, but have not as yet been closed.

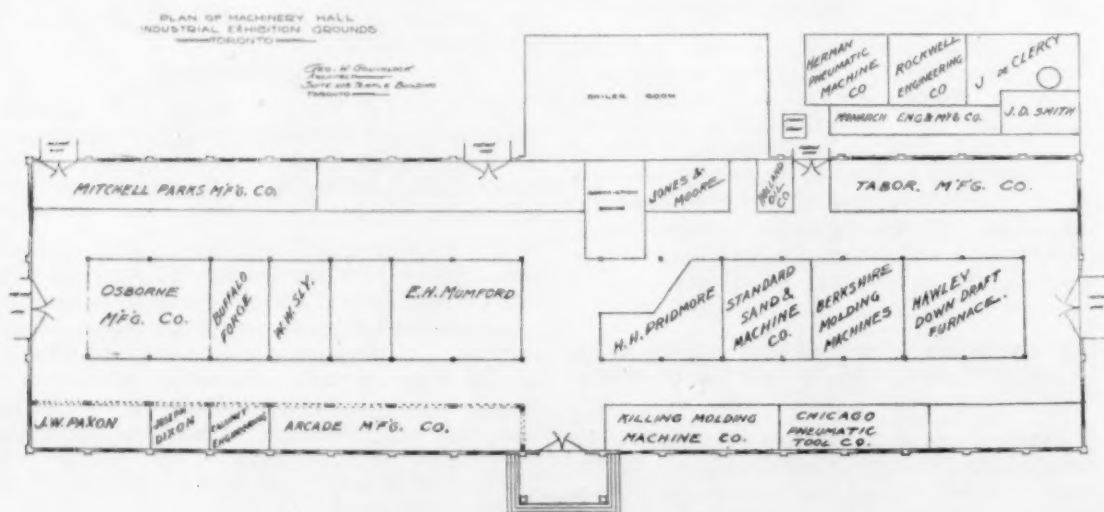
IN THE PROCESS BUILDING.

THE CARBORUNDUM CO. will show grinding materials.

THE DOMINION FOUNDRY SUPPLY CO. have taken space in which will be shown their apparatus and that of

THE S. OBERMAYER CO., and

THE WHITING FOUNDRY EQUIPMENT CO. Next to them will be the exhibit of



MACHINERY HALL, TORONTO CONVENTION.

E. H. MUMFORD CO. will have their well-known Mumford molding machines, and also the French molding machines on exhibit. In addition to this they will have a French sand mill specially imported for this exhibit.

HENRY E. PRIDMORE will have an exhibit of molding machines.

THE STANDARD SAND MACHINE CO. will exhibit sand mixing, handling and tempering machines.

THE BERKSHIRE MFG. CO. will show their molding machines.

THE HAWLEY DOWN DRAFT FURNACE CO. will show the Schwartz melting furnaces.

THE TABOR MFG. CO. will show molding machines.

THE HOLLAND LINSEED OIL CO. will be making cores.

J. DE CLERCY, in the temporary building, will show one of the A. Baillet cupolas in operation.

THE HERMAN PNEUMATIC MACHINE CO. will have in operation molding machines.

THE MONARCH ENGINEERING & MFG. CO. will show oil melting furnaces.

THE ROCKWELL ENGINEERING CO. will have oil melting furnaces.

THE J. D. SMITH FOUNDRY SUPPLY CO. will have a large core oven in operation.

JONES & MOORE will have electric generators furnishing direct current for use in the building.

J. W. PAXSON will show molding machines and general foundry equipment.

THE HILL & GRIFFITH CO., and that of **FRANCIS HYDE & CO.**, of Montreal.

THE FOUNDRY will have the space shown.

THE HAMILTON FACING MILL CO. have taken space as indicated, in which there will be the exhibit of the

WADSWORTH core machine,

BALLOU'S WHITE SAND CO., and one or two other firms for which the Hamilton people are Canadian agents. This includes

THE REID Molding Machine.

THE CONVENTION HEADQUARTERS, or registration desk, will be next to the entrance, as shown. Next to that will be the exhibit of

CASTINGS, on one side, and on the other

THE DETROIT TESTING LABORATORY, at the position indicated by the letter A.

THE ROBESON PROCESS CO. have taken the space at L.

CANADIAN MACHINERY is located at the space marked B.

R. B. SEIDEL is located at the space marked C.

THE DETROIT FOUNDRY SUPPLY CO. have the space marked D.

W. W. LINDSAY will be found at the space marked E.

THE CLEVELAND WIRE SPRING CO., at the space marked F.

THE J. S. MCCORMICK CO. will be found at the space marked G.

THE GOLDSCHMIDT THERMIT CO. have the space marked H.

CANADIAN GAS POWER AND LAUNCHES CO. are located at I.

FREDERIC B. STEVENS has taken the space at J.

HAMILTON FACING MILLS, at space K.
REGISTRATION DESK, at M.
CASTINGS, at N.
CARBORUNDUM Co., at O.
DOMINION FOUNDRY SUPPLY Co., at P.
HILL & GRIFFITH Co., at Q.

There are several other firms, whose space will be definitely assigned during the next few days. It is evident from the plans now in hand that the central bay and most of the north bay of the Process Building will be taken up.

It is not the intention to use the south bay unless obliged to do so.

The following have joined the association:

Gregg Mfg. Co., care of Standard Brass Foundry, Central avenue, Cleveland, O.

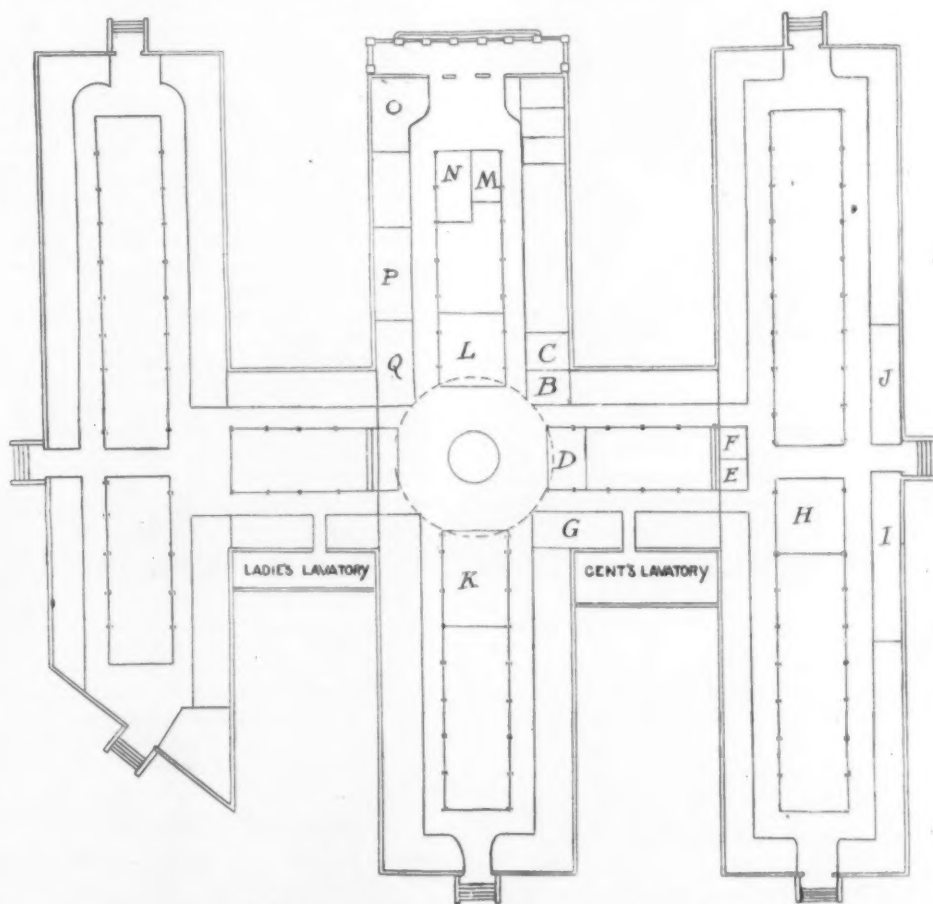
Kroeschell Bros. Co., 55 Erie street, Chicago.

From now on the secretary's address will be: H. M. Lane, care of the Toronto Foundry Co., Ltd., Toronto, Canada.

For the first time in the history of the trade, all branches of

for two hours during lunch time. Later it will be running in the afternoon for two hours or more. The principal point to be demonstrated is the possibility of furnishing a small amount of iron continuously for a long period with only a moderate consumption of fuel, and also the possibility of starting and stopping the cupola at will. They guarantee to pour very thin, light work, and arrangements have already been made for pouring a large number of moulds for light, delicate castings. This demonstration will be unique and of great interest to many foundrymen.

AMERICAN BRASS FOUNDERS' ASSOCIATION.—President, Charles J. Caley, New Britain, Conn.; secretary, Andrew M. Fairlie, Copper Hill, Tenn.; treasurer, John H. Sheeler, Philadelphia, Pa. The object of the association is purely educational, and is accomplished by the collection of such information as will be of benefit to the members and to general shop practice; by the presentation of papers on appropriate subjects, and by the publication of such literature.



PROCESS BUILDING, TORONTO CONVENTION.

the iron and brass foundry will be fully represented in operation, including core ovens, and cupola and brass melting furnaces.

The still exhibits, which will occupy the Process Building, will also be unusually attractive, and many of the firms have plans on foot which will prove beyond question that the Process Building is not asleep, even if it does not make so much noise as its neighbor across the way.

CUPOLA IN OPERATION.

Arrangements have been made by J. de Clercy, agent for the Société Anonyme d'Exploitation des Brevets Cubilot A. Baillot, of Montreal, Canada, to exhibit a cupola in operation at the convention. This cupola is now being erected in a temporary building adjoining Machinery Hall. The blast for the cupola will be furnished by one of the new Sturtevant turbine blowers operated by a steam turbine. A novel feature of the installation is that the exhibitors expect to put on the blast in the morning and to pour iron for an hour and then to bank the cupola

The following new members have recently joined the association:

Bridgeport Deoxidized Bronze & Metal Co., Bridgeport, Conn.
A. H. Warner, care of E. Stebbins Mfg. Co., Springfield, Mass.
M. F. Murphy, Amer. Locomotive Co., Schenectady, N. Y.
Wm. H. Barr, Lumen Bearing Co., Buffalo, N. Y.
J. D. Squires, Mgr. Lyman Mfg. Co., Buffalo, N. Y.
Fred Schnell, Buffalo, N. Y.

Titles of papers to be read at the convention at Toronto, June 8-12, have been submitted as follows:

W. N. Best: The Value of Liquid Fuel in Brass Foundry Practice.

F. A. Coleman: The Efficiency of Brass Melting Furnaces.

W. M. Corse: The Metallurgy of the Bronze Age in Europe.

F. H. Dimock: Modern Appliances and Processes in Foundry Work.

J. N. Gamble: Quality versus Quantity.

Dudley A. Johnson: Prolonging the Life of a Crucible.

W. A. Porter: The Outside versus the Inside Man.
 Chas H. Proctor: The Electrochemical Cleaning of Metals and Its Application to Commercial Uses.
 W. S. Quigley: Oil as Fuel.
 Dr. Heinrich Ries: The Relation Between the Chemical and Physical Characters of Molding Sands.

Indications are for a large attendance at Toronto. Representatives of the various affiliated associations are now on the ground perfecting arrangements for the entertainment of the guests.

Those intending to identify themselves with the association are urged to apply for membership before the convention. While admission to the sessions of the association, as well as to the exhibits, is free to all, membership in the association will admit also to the social features of the convention, provided by the entertainment committee, which, on the provisional program, include a smoker, a trolley ride, and a moonlight excursion on the lake.

Write to the secretary for a copy of the constitution and application blank. Annual dues, \$5.00.

THE NATIONAL ASSOCIATION OF BRASS MANUFACTURERS will hold their semi-annual meeting in Toronto, Can., on Tuesday and Wednesday, June 9th and 10th, which is the week during which all the other foundry supply interests and associations will meet in that city.

AMERICAN FOUNDRYMEN'S ASSOCIATION.—President, Stanley G. Flagg, Jr., Stanley G. Flagg & Company, Philadelphia, Pa.; secretary-treasurer, Richard Moldenke, Watchung, N. J. At the annual convention, held in June, an opportunity is given for interchange of thought on foundry practice. The objects of the association are entirely educational. Foundry information is disseminated to the membership and the trade at large. Original investigations are made to disclose the reason for difficulties. Committees do valuable work in the way of standardizing foundry practice.

TORONTO CONVENTION.

Reduced rates have been granted by the railroads. All those visiting the convention should obtain a certificate from the ticket

agent of whom the single ticket to Toronto is purchased. This will be handed to the secretary at the convention and the reduction will be given when the return ticket is purchased.

The following are the papers and discussions for the convention:

The Prevention of Accidents in the Foundry. Thos. D. West, Sharpville, Pa.
 Core Sands and Mixtures. Arch. M. Loudon, Elmira, N. Y.
 Coke Making for the Foundry. Dr. R. Moldenks, Watchung, N. J.
 Annealing Castings. W. M. Carr, New York.
 Foundry Warehouse Methods. F. C. Everitt, Trenton, N. J.
 Patternmaking for the Specialty Shop. H. M. Lane, Cleveland, O.
 Pig Iron Specifications. Discussion.
 The Elimination of Foundry Waste. H. Emerson, New York.
 Report of Cost Committee. Falconer, Taylor and Emerson.
 Shop Betterment. H. F. J. Porter, New York.
 Oxy-Acetylene Welding of Castings. S. H. Taylor, Philadelphia, Pa.
 Notes on Cupola Practice. Prof. H. McCormack, Chicago, Ill.
 Machine Molding. E. H. Mumford, Philadelphia, Pa. Discussion.
 Use of Turning and Borings in the Foundry. Discussion.
 Titanium in Cast Iron. Dr. R. Moldenks, Watchung, N. J.
 Ferroalloys in the Foundry. W. M. Saunders, Providence, R. I.
 Cupola Thermics. S. H. Stupakoff, Pittsburg, Pa.
 Specifications for Castings to be Machined. H. E. Diller, Chicago, Ill.
 Foundry Transportation Methods. David Goehr, Cleveland, O.
 Automobile Cylinder Making. F. W. Stickler. Discussion.
 Thermit in the Foundry.
 Further Notes on Sandless Castings. V. B. Lamb, New Haven, Conn.
 Discussion asked for on Ethics of Selling Castings.
 Discussion asked for on Clamping Molds.
 Discussion asked for on Sea Coal Facings.
 Discussion asked for on Radiator Cores.
 Discussion asked for on Cast Iron for Mine Water.



PERSONALS



ITEMS OF INTEREST TO THE INDIVIDUAL.

Thomas Johnson, formerly of Birmingham, England, has become manager of the English & Australian Copper Company, Limited, Waratah, New South Wales.

W. D. Martin has resigned his position as manager of the Waterbury Rolling Mills, Incorporated, Waterbury, Conn., and is now in the Sales Department of the Waterbury Brass Goods Corporation.

A. A. Butler, who was for twenty years Eastern agent of the Rome Brass & Copper Company, has opened an office at 26 Union street, Boston, Mass., as agent of the Detroit Copper & Brass Rolling Mills.

Henry Wiesner, formerly in charge of the plating department of Gill & Co., Incorporated, of Philadelphia, Pa., is now foreman of the plating department of the Atlantic Electric Company, of Norfolk, Va.

Charles R. Bryson has been appointed Western agent of the Philadelphia (Pa.) Roll & Machine Company with headquarters at 501 Curry Building, Fourth avenue and Ross street, Pittsburg, Pa. The company manufactures chilled rolls, rolling mill equipment and charcoal air furnace iron castings.

R. F. Lang, of 31 Broadway, New York, sailed for Europe on April 22nd. Mr. Lang's time will be largely devoted to matters connected with the importation into this country of the various alloys which he handles, and the investigation of certain new ones which have been developed and used very successfully by

the metal trade abroad. Mr. Lang will visit England, France, Germany and Russia, returning to New York about July 15th. In the meantime the New York office will be in charge of Adolph R. Dessow, who will look after Mr. Lang's interests during his absence.

James Clendenin, vice-president of the Baltimore Copper Smelting & Rolling Company, now has his headquarters at the New York office of the American Smelting & Refining Company, 165 Broadway. Mr. Clendenin is also on the directorate and executive committee of the American Smelting & Refining Company.

Edward Goodrich Acheson, of Niagara Falls, N. Y., has been awarded recently a Rumford Medal for his discoveries in light and heat. Mr. Acheson is the inventor of carborundum, artificial graphite, siloxicon and silicon. He has been awarded a number of medals from other American societies for his inventions and industrial accomplishments. The Rumford Medal is international and has been awarded 64 times in all. The Royal Society of England has presented it to 43 notables, and the American Academy of Sciences to 21. The medal is awarded to only the most eminent scientists and inventors.

The New York Metal Exchange, 234 Pearl Street, New York City, have enlarged the Quotation Committee. The copper section now includes a jobber, an exporter and a producer of copper. The make-up of the committees for the ensuing year is as follows:

Copper—Berthold Hochschild, American Metal Company;

Stanton, Michigan Copper Company; L. Vogelstein, L. Vogelstein & Co.; Harmon W. Hendricks, Hendricks Brothers.

Tin—Messrs. Koning, Baerwald, Hall, and Groves.

Lead—Messrs. Hochschild, Steiner, and Langeloth.

Spelter—Messrs. Vogelstein, Hochschild, and Elkan.

George O. Thompson, a plater of considerable note, who has had charge of various plating plants in the United States and Canada, has lately taken up the work of metallizing lace, flowers and other non-metallic substances. Mr. Thompson has been very successful in metallizing lace, and has sent a sample of his work to THE METAL INDUSTRY office. In metallizing flowers he reports that one of the difficulties is to make them keep their natural shape while under the solution. Roses and carnations have a tendency to fall together, thereby covering up the heart of the flower and preventing deposition from taking place in an even manner. However, as mentioned, Mr. Thompson is getting over this difficulty and is prepared to furnish samples of his work. His present address is at 28 Mance street, Montreal, Canada. Many samples of metallization work have been illustrated in former issues of THE METAL INDUSTRY and an article describing the process in detail was published in the May, 1906, issue.

DEATHS.

FRANK H. CHAMBERLIN.

Frank H. Chamberlin, one of the younger successful business men of Cleveland, Ohio, died at the home of his father, F. L. Chamberlin, No. 2,227 E. Fortieth street, on the morning of April 10 after a three weeks' illness.

At the time of his death Mr. Chamberlin was president of the J. D. Smith Foundry Supply Company. He was also a member of the Builders' Exchange and of several prominent clubs.

He was born in Cleveland, July 29, 1870. He graduated from the Case School of Applied Science in 1892. His first business connection was with the engineering department of the Variety Iron Works, and two years later he established the Cleveland Facing Mill, of which he remained proprietor for six years. Then

he became identified with the corporation of which he was the executive head.

Mr. Chamberlin was possessed with a kindly nature and an



FRANK H. CHAMBERLIN.

attractive personality and was very well liked and respected in the foundry trades. He leaves a widow and two boys.

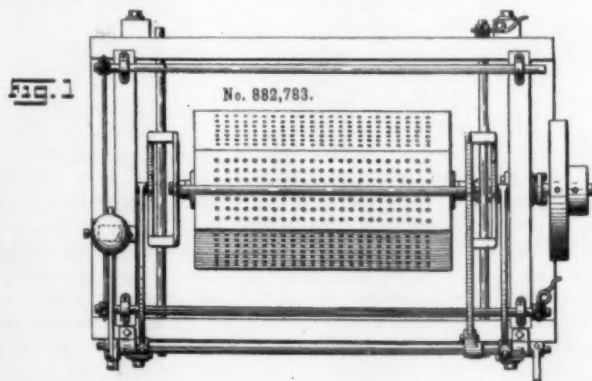


PATENTS

REVIEW OF CURRENT PATENTS OF INTEREST TO THE READERS OF THE METAL INDUSTRY.



882,783. March 24, 1908. BASKET RAISING AND LOWERING DEVICE FOR ELECTROPLATING APPARATUS. Willis R. King, of Newark, N. J., assignor to the Hanson & Van Winkle Company, of same city. This invention consists, primarily, in the novel electro-

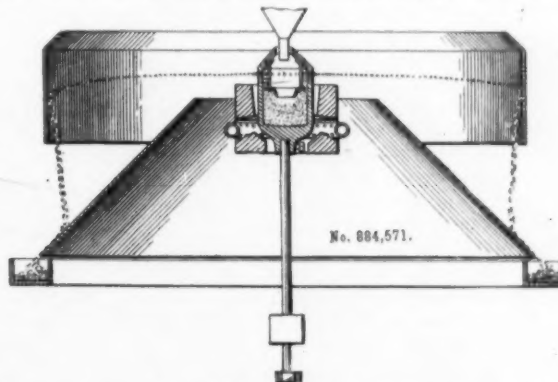


plating apparatus and mechanism for readily raising and lowering the basket or container. This operation is performed without interfering with the mechanism for coupling the driving shaft with the shaft of the basket when within the tank. This provides simple means for raising the basket from the tank in order to discharge its contents or to recharge it with articles to be plated, and then easily and quickly lowering it again into the solution.

885,729. April 28, 1908. TIN PLATE CATCHER. Ernest L. Cronmeyer, Granite City, Ill. This invention relates to a device

used in connection with tinning machines for delivering a freshly coated plate from the rolls of the machine to a chute. This device does away with feed rolls, which have a tendency to mar the hot oily plates.

884,571. April 14, 1908. PROCESS FOR FORMING METAL INTO FLAKES. Percy F. Cowing, of New York city. In this process the metal, including the dross, is subjected while in a fluid mass to centrifugal action by which the heavier material is thrown outward. This heavier material is confined, except at a series of



small holes through which it is forcibly expelled by the centrifugal action, and from which it is emitted in small particles, the metal breaking up into small particles when it leaves the holes. Before the particles have had time to chill they strike the sides of the apparatus and flatten into small flakes.



TRADE NEWS

TRADE NEWS OF INTEREST DESIRED FROM ALL OF OUR READERS. ADDRESS
THE METAL INDUSTRY, 61 BEEKMAN STREET, NEW YORK.



E. H. Ferree, a manufacturer of metal novelties at Lockport, N. Y., has begun the manufacture of leather bags with metal mountings.

The Combined Foundry Supply Company, is the title of a new foundry supply house of Buffalo, N. Y., presided over by J. S. Kingsland.

The Depasse Manufacturing Company, platers, formerly at 206 East 19th street, New York City, have moved to 318-320 East 23rd street.

The McCullough-Dalzell Crucible Company, Pittsburg, Pa., who have been partially closed during the business depression, started in full operation on May 1.

The Charles J. Bogue Electric Company, manufacturers of plating dynamos, are now located in their new quarters at 513-515 West 29th street, New York City.

The Northern Indiana Brass Works, of Elkhart, Ind., are building an addition to their factory 20 by 60 feet, and are now 6 months behind in their orders.

The New York office of the Chicago Pneumatic Tool Company has been moved to the 16th floor of the Fulton Terminal building, corner Church and Fulton streets.

Believing that the present is a good time to increase their facilities, the Ajax Metal Company, of Philadelphia, Pa., have enlarged the capacity of their foundry 25 per cent.

It is reported that negotiations have been completed by which the Rolling Mill at Toronto will soon start to produce metal. The mill has been closed for several years.

The Rome Metal Company, Rome, N. Y., announce that they are manufacturing seamless brass and copper tubing for all purposes. They make small sizes, thin gauges and special shapes.

R. B. Seidel Black Lead Crucible Works, 1,300 Callowhill street, Philadelphia, Pa., report that they will have a larger space at the Toronto Convention than they had last year at Philadelphia.

C. G. Hussey & Co., rollers of copper, of Pittsburg, Pa., report that they are running full time, the only reduction they have made during the business depression was to take off their night shift.

The Bassite Mining & Smelting Company, of Cincinnati, Ohio, have sent THE METAL INDUSTRY office some samples of castings made with their alloy "Bassite." The castings are sound and have a beautiful coloring.

H. M. Shimer & Co., of Philadelphia, Pa., have begun operating their plant again, which was closed for five weeks on account of deferred shipments. The company is selling brazing solder to all of the U. S. Navy yards.

The Dow Chemical Manufacturing Company, of Mansfield, Ohio, have opened a Chicago sale office at 644-646 American Trust Building, where they will handle their electro-platers' equipment and supplies, and chemicals.

After experimenting three years, the Niagara Imperial Machinery & Novelty Company, Lockport, N. Y., have opened a shop at 58 Market street, where they will manufacture light machinery, metal patterns and stamped goods.

The business of the Bridgeport (Conn.) Safety Emery Wheel Company, Inc., which has been placed in the hands of a receiver, Hobart E. French, is being conducted with the same careful and prompt attention to orders as heretofore by the receiver.

Fries & Co., 91 Main street, Buffalo, N. Y., are running on their regular hours and have not had to put their force on part time during the past business depression. They manufacture a line of brass goods and do jobbing, brass founding and finishing.

The D. H. Stoll Company, of Buffalo, N. Y., report that they furnished the power squaring shears for the new Buffalo Copper & Brass Rolling Mill, six shears in all. The new mill has been running the past three months and is now going in fair shape.

Uniformity and efficiency has become the slogan of the Taunton Crucible Company, of Taunton, Mass., in announcing the merits of their blacklead crucibles and retorts. Their works were established in 1865. They solicit inquiries for a list of sizes and prices.

The Atlas Brass Company is the name of a new firm which has opened a general brass foundry at 991 South Front Street, Columbus, Ohio. The concern will do a general brass casting business. The owners of the plant are John Wittmann and I. H. Pleukharp.

The Carborundum Company, of Niagara Falls, N. Y., want every user of abrasives to look them up at the American Foundrymen's Convention in Toronto, June 8-12, where they will have an attractive exhibit. They will also show furnaces lined with carborundum fire sand.

The Buffalo Tube Company, Buffalo, N. Y., which has been in operation for the past three months has been running full time ever since it started. The company manufacture small brass and copper tubes. They are located in the vicinity of the new Buffalo Rolling Mill.

The Randall Tramrail Company have moved from 323 N. Collins street to 333 N. Second street, Philadelphia, Pa., where they are now in the heart of the city. They are getting the affairs of the company straightened out and on a sound business basis. R. T. Randall is managing the company's affairs.

White & Bro., Inc., 1,504 E. Wilt street, Philadelphia, Pa., report that their new copper recovery plant located at Bridesburg, near Philadelphia, is running on full time, the output being sold for the year. Besides this plant the firm have works in Philadelphia where they smelt red and yellow ingot brass.

The Nathan Manufacturing Company, manufacturers of brass goods for steam, water, and gas, have decided to build an addition to their present plant at 416 East 106th street, New York. The new building will be of brick, 91 x 60, and two stories high. It will be used exclusively for the storage of finished stock.

The American Auto Brass Company, of Columbus, Ohio, which recently passed into the hands of a receiver, has been sold to the American Brass & Specialty Company. The company manufacture high grade automobile lamps and accessories, spun brass and other sheet metal specialties, and is now running full handed.

The Clark Novelty Company, Rochester, N. Y., have recently added to their equipment an up-to-date nickel-plating plant, and are now in position to do not only their own work in this line

but outside work as well. This company has had 20 years' experience in the manufacture of metal specialties and special devices of numberless kinds.

Clum & Atkinson, Rochester, N. Y., are figuring on more business. At present they are running on full time with a somewhat reduced force. Their foundry is equipped for making the largest sized castings and they number among their clients some of the largest firms of the country. They also do finishing and sell various metals and alloys.

Some time since the Piqua Brass & Fixture Company, of Mechanicsburg, Ohio, was reorganized as the Ohio Brass & Fixture Company. Another reorganization has just been made and the company is now the Cromer Brass & Fixture Company. The company makes steel fixtures, gas, electric and combination, oxidized copper and polished brass.

The J. A. Parker Company, Livingston Building, Rochester, N. Y., report that they recently put an automatic polishing machine into the H. & H. Manufacturing Company, West Twenty-eighth street, New York city. The company has several more orders, including one from the Gray & Davis Company, Amesbury, Mass., as soon as business improves.

The Meyer Machine & Tool Works, 88 McWhorter street, Newark, N. J., are very busy on orders for experimental work in light machinery, dies, molds, etc. They have enough of this class of work in sight to keep their plant running full time for several months. They have recently perfected and patented a rotary engine which embodies several new features.

Wahle, Phillips Company, 549-551 West 52nd street, New York City, is the name of a new company which will cater to the finer class of work in the manufacture of lighting fixtures and bronzes. Both Mr. Wahle and Mr. Phillips have been connected with Cassidy & Son Mfg. Company, of West 23rd street, for many years, and are very well known throughout the trade.

The Glacier Metal Company, of Richmond, Va., expect to start shortly the erection of a new plant in Manchester, across the James River from Richmond for the manufacture of their Glacier anti-friction metal, "Copper-Tin" bearing metal, and other babbitt metals. The works will be 100 feet long by 40 feet wide, two stories, with a capacity of 25,000 pounds of babbitt metal per day.

The Paige Retort & Crucible Company, of Taunton, Mass., have begun filling orders during the past month and Mr. Paige, the manager, reports that he has contracts from many of his old friends. The company also state that by improvements in their method of manufacturing crucibles it is impossible to overburn or underburn their product. Therefore they are turning out a very high class of goods.

The Goldschmidt Thermit Company, 90 West street, New York City, have established an office and works at 103 Richmond street, West Toronto, Canada, under the management of E. C. Rutherford, of Toronto, who was for several years manager of the Magann Air Brake Company and of the Canadian Brake & Supply Company. A complete stock of thermit and appliances will be carried at the new office.

The United Brass Manufacturing Company, of Cleveland, O., have opened a New York office at 29 West 26th Street, which is under the management of S. P. Schoenberger. The office will carry a full line of plumbers' brass goods for water, gas and steam. The location of the New York branch is convenient for suburbanites and the company will be pleased at any time to welcome old friends and new ones.

The Monarch Engineering & Manufacturing Company, of Baltimore, Md., report that besides the domestic orders they are getting for their furnaces, they have been exporting them to South Africa, South America, Mexico and Canada. They are now building a furnace to hold a No. 525 crucible for melting aluminum. The largest size furnace they have built is one for a copper works. The furnace would take a No. 600 crucible.

The office and works of the Brass Founders' Supply Company, of Newark, N. J., have been moved from 28 Prospect street to larger quarters on the opposite side of the street. In the new premises at 23 Prospect street the company's facilities for turning out brass founders' flasks, etc., will be much better than heretofore. This company reports business as being very satisfactory, with indications of still further improvement in the near future.

The Crescent Machine Company, of Detroit Mich., has filed amended articles changing its name to the Crescent Brass & Pin Company. This change was made by reason of the fact that the former name was misleading, since it conveyed a wrong impression of the work actually done by the company. The company only manufacture machinery for their own requirements, their real business being the making of their lines of radiator and boiler chaplets, etc.

A Pittsburg (Pa.) firm which is actually putting more men to work during the recent hard times is that of Jas. H. Matthews & Co., manufacturers of brass signs. When business became bad in their shops they took the men from the factories and put them out on the road and now things have improved so much that they have had to return the men to the shops and have been getting more help. Their business for the first quarter of 1908 indicates an increase for the year over 1907.

T. B. Hagstoz, Ltd., of Philadelphia, assayers, smelters, and refiners of gold, silver, platinum, mercury, etc., report such a large and increasing volume of business that their present quarters are likely to become insufficient for their needs and require enlargement. Much of the business comes from concerns in the various metal trades throughout this country and Canada who are taking advantage of the dull times to clean up their premises and ship all sweepings, waste, etc., to the smelters.

John Toothill's White Metal Rolling Mill which has been located at 210 Canal Street, New York City, will be moved on June first to Rochelle Park, N. J., where Mr. Toothill has put up a fireproof mill of his own and a stock room where he can store a quantity of sheet white metals. He makes a specialty of white metals, all gauges. Besides his factory at Rochelle Park, Mr. Toothill will have an office in New York, at 66 Pitt Street, where he will also carry a limited stock of sheet.

W. J. Wilder has purchased the South Connellsville, Pa., plant of the Steel & Iron Aluminum Coating Company and is making preparations to start the plant as quickly as possible. The former owners of the plant manufactured sheet aluminum and automobile parts, but Mr. Wilder will take up the manufacture of sheet aluminum upon a patent recently secured by him. Mr. Wilder began coating sheet iron and steel with aluminum several years ago, his first patent for the process having been granted in 1889.

The Reid Metal Refining Company, with offices at 573 Drexel Building, and works at Tioga and Tulip streets, Philadelphia, Pa., report a satisfactory volume of business during the past few months, with prospects for considerable improvement in the near future. This concern, which was established about a year ago, buys all kinds of brass foundry and copper-smiths' ashes, skimmings, grindings, buffings, borings, sweepings, etc., and sells ingot brass to the trade. E. J. Petroff is president of the company, and C. W. Ingham is secretary and treasurer.

Lewis Thompson & Co., Eighteenth street and Indiana avenue, Philadelphia, Pa., report that the sales of their special grade mahogany pattern lumber have increased very rapidly during the past year and that a number of the largest pattern shops in the country are now using it in preference to white pine. Among their customers are the Westinghouse Electric & Manufacturing Company, Pittsburg, Pa.; Morgan Machine Company, Rochester, N. Y.; General Electric Company, Schenectady, N. Y.; Poughkeepsie Foundry & Machine Company, Poughkeepsie, N. Y.; and numerous other well-known concerns. The firm issues a circular on mahogany pattern lumber.

In a recent interview with a representative of the Egyptian Lacquer Manufacturing Company, 152 Front street, New York, it was stated that this company is the oldest and largest manufacturer of lacquers in the world. During the past few months the company has been giving particular attention to getting out some special lacquers to suit the exact requirements of some of its customers who are taking advantage of the prevailing slackness of trade to try out new effects. The company invites inquiries from all those using lacquers for any purpose, and points to its long and successful record as the best evidence of its ability to meet any calls upon it.

Special products of the Finkell-Hachmeister Chemical Company, of Philadelphia, Pa., are red copper compound for plating, sulphuret of potash for oxidizing, potash lye for cleaning, cyanide of potash, chemically pure, for high grade gold and silver plating. The company say that their chemicals are the strongest, purest and best on the market and that the repeat orders that they get and the sources from which they come prove their claims. They recently received an order from Tiffany's. Another new product of theirs is Black Magnetic Polishing Rouge, specially for use of silversmiths, manufacturing jewelers and makers of fine metal goods.

On another page the New Britain Machine Company give a number of reasons for buying a "Whitney" jack. Among them are, because it is safe, no belts exposed; because it is sanitary, no belt drafts to scatter the dust; because it starts quickly, only takes five seconds; because it is stopped quickly, 5 seconds all of the time that is needed. The spindle is always cool. The bearing is positively self-oiling and dustproof; the wheels are quickly changed. The makers say it is considered to be the farthest advance in polishing machinery and is worthy the attention of every manufacturer. Further particulars may be obtained from the New Britain Machine Company, 200 Chestnut Street, New Britain, Conn.

The International Acheson Graphite Company, of Niagara Falls, N. Y., have broken ground for the erection of new buildings which will cost approximately \$100,000, and which, when completed, will practically double their producing capacity in the manufacture of graphite products, including graphite for lubricating purposes. The furnace addition will provide twelve more furnaces, and a complete new grinding equipment for the powdered product will be included in the enlargement. The company's business has been steadily growing, and practically half of their product is being sent abroad. Their graphite anodes are used in electrochemical work, many processes being dependent upon graphite anodes for success. The electrodes are also largely used in electrolytic and furnace work in the production of the various metals.

What is probably one of the largest silverware contracts ever given out has just been awarded to the Meriden Britannia Co. (International Silver Co., Successor), of Meriden, Conn. The contract covers all of the silverware that will be used by the various railroads and steamships, as well as hotels and restaurants, comprising the so-called "Harriman lines," as follows: Union Pacific Railroad Co., Oregon Short Line Railroad Co., Oregon Railroad and Navigation Co., Southern Pacific Co., Northwestern Pacific Railroad Co., Illinois Central Railroad Co., Southern Pacific Company's Atlantic Steamship Lines, as well as, probably, the Pacific Mail Steamship Co. At the present time, the Harriman lines have 100 dining cars, 50 buffet cars, 50 private cars, as well as many restaurants, hotels and steamships, all using silverware, with many additions now in prospect.

REMOVALS

The E. H. Mumford Company, manufacturers of molding machines, Philadelphia, Pa., are now located at 1,223 Spring street.

H. M. Anthony, manufacturers of "Kalye" for preparing metal surfaces for plating, have moved from 48 West Broadway to 261 Greenwich street, New York.

Charles Engelhard, agent for the "Heraeus Le Chatelier Pyrometer," formerly located at 41 Cortlandt street, has moved into the Hudson Terminal Building, 32 Cortlandt street.

The Watson-Stillman Company, manufacturers of hydraulic machinery, New York city, have moved from 26 Cortlandt street to the Hudson Terminal Building, 32 Cortlandt street.

The Skelley Manufacturing Company, manufacturers of telephone specialties, have moved into their new plant located at Davis avenue and Fifteenth street, Canal Dover, Ohio.

FIRES

A fire having an unknown origin damaged the plant of the Boston Brass Company, 40 Oliver street, Boston, Mass., to the extent of \$3,500 on April 13. The damage was mainly to stock and did not interfere seriously with business.

The fire damage to the Bay State Brass Foundry, reported March 19, was only about \$2,000. The building is owned by Harrison W. Smith, and there were no chemicals or soft coal stored in it, as was reported. The foundry business is being conducted by G. H. Lane and F. W. Peckham. There was no stopping of molding, and the repairs and business are going right along together.

FINANCIAL

The Imperial Brass Manufacturing Company, of Chicago, Ill., has increased its capital from \$10,000 to \$50,000.

The sixteenth annual report of the General Electric Company, for the year ended Jan. 31, shows profits of \$6,586,653. There was paid in dividends \$5,183,614, leaving \$1,403,039 carried to surplus account. The surplus at the end of the fiscal year was \$15,110,796, making the surplus on Jan. 31, 1908, \$16,513,836. President C. A. Coffin in his annual report says:

"Late in the year there was a sudden and severe shrinkage in the value of all merchandise and materials used by your company, notably copper. The book value of inventories was reduced by about \$2,000,000. Reserves and allowances for depreciation of factory plants and the shrinkage in inventory values have greatly reduced the profits of your company."

Stockholders of the Westinghouse Electric & Manufacturing Company have received a circular from the president, George Westinghouse, urging them to participate in the readjustment plan formulated by the Merchandise Creditors' Committee. The plan provides for the taking of \$10,000,000 of new assenting stock, of which \$4,000,000 is to be accepted by creditors in payment of their claims and \$6,000,000 by stockholders. Creditors representing \$3,250,000 have already signed or agreed to sign this agreement, but the balance of \$6,000,000 must be provided by stockholders. The circular states:

"If a sale of the property results from the inaction of the stockholders, no money invested in the purchase of a future interest as a result of a drastic reorganization can be anything like as safe and profitable an investment as the subscription to shares now asked for with a consequent uninterrupted operation of the company."

It is a fact not generally known that the Westinghouse Company conducts the largest brass foundry in this country and probably in the world.

In a pamphlet issued by the National Lead Company to cover the operations for 1907, the net earnings are shown to have increased about \$450,000 over those of 1906 and about \$850,000 over those of 1905. The balance of earnings after payment of the preferred stock dividends was \$1,236,500, or 5.96 per cent. of the common stock outstanding. In his statement to stockholders, L. A. Cole, president of the company, says:

"It will be noted that a further issue of \$3,750,000 in preferred stock has been made. This was in payment for the properties

mentioned in our last annual report. The properties referred to, together with the mining property, have been useful sources of revenue in the year under review.

"The company's records show an increasingly wide distribution of its stock, 5,566 checks having been sent out in payment of the last dividends. There is no controlling interest and no exceptionally large holding. Prior to the formation of this company less than 150 persons shared directly in the profits of the various properties which later became part of the National Lead Company."

INCORPORATIONS

THE GUILDERLAND PLATING COMPANY, of Guilderland, N. Y., has been incorporated with a capital of \$5,000 by W. J. Reinhart, E. O. Freedman, and C. G. Zeilman.

THE NATIONAL ALUMINUM WORKS, of Wellsville, N. Y., has been incorporated with a capital of \$150,000 by John E. Potter, N. B. Potter, and Clarence H. Potter, all of Wellsville.

THE CENTRAL BRASS & FIXTURE COMPANY, of Mechanicsburg, Ohio, has been incorporated with a capital of \$40,000 by D. S. Comer, E. Horr, John M. Maddex, Joseph F. Mumma and E. L. Byers.

THE HEMPSTEAD BRASS COMPANY, of Hempstead, N. Y., has been incorporated with a capital of \$10,000, the directors being J. R. McLean, E. C. Muncke, and Theophilus Parsons, all of Hempstead.

THE BARCO BRASS & JOINT COMPANY, of Chicago, Ill., has been incorporated with a capital of \$15,000 to manufacture and deal in wood, steel, brass, etc., by George M. Bard, Francis N. Bard, and Ralph A. Bard.

THE JEWETT STAMPING & ENAMELING COMPANY, of Columbus, Ohio, has been incorporated with a capital of \$25,000 by Fred Spriggs, C. Landkrohn, H. W. Herman, G. W. Dankworth and C. H. Dankworth.

THE BUFFALO GALVANIZING & TINNING WORKS, of Buffalo, N. Y., has been incorporated with a capital of \$20,000 to do general galvanizing and tinning. The incorporators are: C. J. Vigt, M. Scheeler, and F. Grimm.

THE METALLIC REPRODUCTION COMPANY, of North Chicago, Ill., has been incorporated with a capital of \$5,000 by William Kefes, Bernard A. Drostowicz and John W. Trout. The company will manufacture and sell metallized articles.

THE PRYOR MANUFACTURING COMPANY, of Chicago, Ill., has been incorporated with a capital of \$50,000 to manufacture and deal in metal specialties. The incorporators are: John G. Sandrez, Samuel A. Ettelson and Charles Weinfeld.

THE NATIONAL METAL SPINNING & STAMPING COMPANY, of Brooklyn, N. Y., has been incorporated with a capital of \$10,000. The directors are: Samuel Tepfer and Harry Tepfer, 454 Hopkinson avenue, and George M. Tepfer, 1412 Pitkin avenue.

THE LACKAWANNA FOUNDRY, of Dover, N. J., has been formed with Mayor George Pierson as president. The company has purchased the large foundry building formerly occupied by the Sims-Kent Company. The company will make iron, brass and copper castings.

THE EXCEL ELECTRIC HEATING COMPANY, of Newark, N. J., has been incorporated with a capital of \$40,000 to manufacture electrical appliances. The incorporators are: R. W. Osland, Plainfield, N. J.; E. B. Drake, Newark; and E. G. Russell, Brooklyn, N. Y.

THE J. W. RUSSELL COMPANY, of New York City, has been incorporated with a capital of \$15,000 to manufacture electroplating metallic substances. The incorporators are: James W. Russell, 424 1st street; Emile Dauphinat and Emile Dauphinat, Jr., 1191 Bergen street; all of Brooklyn.

THE BERKSHIRE MANUFACTURING COMPANY, of Boston, Mass., has been incorporated with a capital of \$25,000 by Emanuel Ashworth, Charles S. Mason and Tilly H. Eaton. The company will manufacture and deal in articles composed of iron, steel, brass, copper, wood and metals of all kinds.

THE PROSPECT MANUFACTURING COMPANY, of Waterbury, Conn., has filed incorporation papers. The capital is \$9,000 and the incorporators are: Edward A. Harriman, of New Haven, Conn.; Alfred C. Baldwin and S. Bigelow Cheney. The company will engage in the manufacture of articles of wood, brass, copper, zinc, tin, iron and other metals.

THE NATIONAL ZINC CORPORATION has filed articles of incorporation in the County Clerk's office, Camden, N. J., the authorized capital being \$6,000,000. The corporation is permitted to mine and deal in zinc and all other kinds of ores, metals, and minerals. The incorporators and the amount of stock held by each, the aggregate of which is \$1,000, are as follows: Kenneth M. Coolbaugh, Philadelphia, eight shares; William J. Wilde, Philadelphia, one share; George B. Evans, Camden, one share.

PRINTED MATTER

GREASE AND OIL CUPS. We have received from the W. D. Allen Manufacturing Company, of Chicago, Ill., a catalogue describing their grease and oil cups.

HIGH GRADE ALLOYS. A very comprehensive catalogue has been received from the Geo. G. Blackwell, Sons & Co., Ltd., The Albany, Liverpool, Eng., dealing with their "Lion Brand" alloys, metals, and steel makers' specialties.

VALVES AND GAUGES. The American Steam Gauge & Valve Manufacturing Company, of 208-220 Camden street, Boston, Mass., have published a large catalogue dealing with their gauges, valves, indicators, and kindred appliances for governing, measuring, recording and controlling steam, water, air, gas, oil, ammonia, and all other pressures.

GENESEE BRAND METALS. A leaflet by the Hazard, Coates & Bennett Company, of Rochester, N. Y., mentions the many departments of their extended metal business. These include white metals, brass and bronze composition, scrap metals, babbitt metal and many grades of anti-friction metals designed for the widest range of work. The policy of the concern has always been "honest representation, fair dealings, justice to the seller and satisfaction to the buyer."

LIQUID CORE COMPOUND. The core compound placed on the market by the W. H. Steward Manufacturing Company, 65-69 Delevan street, Brooklyn, N. Y., is compounded from pure oils, and is free from cheap ingredients which add bulk, but have no value as a core mixture. This compound is an oleaginous composition prepared in a liquid form ready for use in making cores that are baked on plates or in molds to be mixed with the regular core sand in the proportions mentioned.

"BEARING THE QUESTION" is the title of a very attractive pamphlet issued by the Empire Metal Company, of Syracuse, N. Y., which contains much valuable information on bearing metals in general and their own brands of bearing metals in particular. These bearing metals are made to suit all conditions, the different brands being designed for everything between high speed and low pressures to slow speed and high pressures. The catalogue also mentions the many fine qualities of their "solder that binds," which is a superior phosphorized solder, clean and very liquid.

BABBITT, LINOTYPE, ELECTROTYPE METALS. A very interesting catalogue has been received from the North American Smelting Company, 9th and Thompson streets, Philadelphia, Pa., manufacturers of babbitt, linotype, monotype, stereotype, electrotpe metals, and bronze and brass castings. For the past 43 years this company has been engaged in the compounding and mixing of metals, and is noted for the uniform quality of its different grades. The company also makes a specialty of alloys after any particular formula and is ready at any time to quote prices for compounding the same.

KNUCKLE JOINT, HORIZONTAL AND SPECIAL PRESSES are very fully treated in Catalogue K just issued by the Waterbury Farrel Foundry & Machine Company, of Waterbury, Conn. Here we find illustrated and described the wide line of presses of this type, together with the various attachments to be used with them. The knuckle joint type of press, which embodies the mechanical device known as the toggle, gives to the gate or slide of the press a very slow movement at the working end of the stroke, a feature particularly desirable in operations where the metal must flow under pressure.

WORKS AND PRODUCT of the Farrel Foundry & Machine Company, Ansonia, Conn. As this company manufacture a large and varied line of machinery, they have issued a small pamphlet, clearly illustrated, mentioning very briefly their products. In addition to the regular lines enumerated the company are prepared to design and build special machinery of large and heavy construction. The list includes complete lines of rubber machinery, linoleum, insulating and celluloid machinery; chilled and dry sand rolls; rolling mill machinery; large and difficult castings; lead manufacturing machinery; sugar machinery; stone and ore crushing machinery; transmission machinery, etc.

WET TOOL GRINDERS. The Diamond Machine Company, of Providence, R. I., have prepared an elaborate catalogue descriptive of their improved wet tool grinders, both motor and belt driven. The No. 2 machine has a drop apron. This was introduced because of calls for a machine having a greater distance between the wheel and the table, thus permitting longer tools to be ground. The apron or table is deep and of good size, designed especially to prevent the throwing of water around the machine. The Nos. 4 and 5 grinders have the electric motor mounted upon the rear of the column, the drive to the wheel being by chain and sprockets, which are completely covered with a guard.

METAL MARKET REVIEW

New York, May 13, 1908.

COPPER.—The London prices of G. M. B. showed very little change during the month. Trading has not been very active and operators in that speculative center are waiting for something to turn up in America. The market opened at £57 17s. 6d. and closed at £57 10s.

The New York market has been a dull, sagging market all the month, with prices fully one cent per pound lower. There has been no large business reported, and consumers are naturally only buying as their orders call for it. The exports for the month were very heavy—31,753 tons against 17,363 same month a year ago—making a total of 110,957 tons for the first four months of 1908, against 57,008 tons in the same period of 1907. We have referred to these heavy exports before and the situation has been, of course, very much relieved. Consumers seem to be waiting the increased supplies from the Amalgamated mines which will be ready for the market about the end of this month. The Standard Oil people, however, will be able to fully take care of any supplies that may come along. Meanwhile, the demand may spring up and consumers be ready to place orders for copper before very long.

In the iron trade the best posted selling agents look for a buying movement in August, and with the iron market moving copper and other metals are bound to share in the activity. The iron market is always dull in the summer months except in boom years, and the buying movement generally starts in the month of August. At the moment the copper market looks weak and unsettled, but any kind of a buying movement would send prices up over one cent per pound. We quote Lake: 12.75 to 12.87½. Electrolytic: 12.62½ to 12.75. Casting around 12.50.

TIN.—London market in pig tin shows an advance in the month of 14 10s. The demand from America has, as usual, been the chief support of the foreign market.

The demand in America has not been as good as expected—3,000 tons' consumption this month against 3,150 tons last month. April should be one of the best months in the year.

We have two more good months before us and meanwhile things may be more active all round. The shipments for the month were 1,300 tons less than last month, and the total visible supply at the end of April was over 2,000 tons less than a month ago; from a "bull" operator's point of view these figures look good, but from the American consumers' end of it it probably means higher prices. The market closes to-day around 31½ cents, against nearly 32 cents last month. For 5-10 ton lots we quote the market 31.50 to 31.40 for futures, smaller lots 15 to 20 points higher.

LEAD.—The foreign lead market declined about £1 per ton during the month.

In the home market lead has ruled very strong, with a good all round demand, and prices advanced 15 points to 4.15 with a very strong probability that the Trust may advance the price to 4.25; it all depends on the demand, and if the Trust see that American consumers must have lead, the Trust will see to it that they get some of the consumers' money—that's what they are in the business for.

SPELTER.—The foreign spelter market has stuck around £21 all the month. The operators over there seem to like that number; it is a great game, and any amount of money can be won or lost at it very quickly.

The home markets have ruled around 4.50 to 4.55 in St. Louis and 4.70 to 4.75 in New York. Demand has been fairly good, but the many accumulations out West are still to be accounted for; no advance was possible. The market closes to-day a shade easier at 4.52½ in St. Louis and 4.65 in New York.

ANTIMONY.—The foreign prices are about £1 higher, but the market is very dull.

The home market has ruled dull and uninteresting, with price nominally unchanged. Cooksons around 8.70, Halletts 8.60.

ALUMINUM.—Prices are unchanged, 33 to 35, according to quality and quantity.

SILVER continues to sag about 1 penny per ounce lower in London to around 24¼ pence, and in New York it seems to be working down to a 50-cent basis; market to-day is 52½ cents, against 55¼ a month ago.

SHEET METALS.—Sheet copper is unchanged at 17 cents base, and there has been no change in rods, bars, wire or aluminum.

OLD METALS.—The old metal market continues to plod its weary way without apparently any chance for dealers to turn an honest or in fact any kind of a penny on the turn of the market. Scrap copper continues to be marked down. Composition and the white metals are inclined to be firmer.

THE APRIL MOVEMENTS IN METALS

COPPER—	Highest.	Lowest.	Average.
Lake	13.50	12.50	12.75
Electrolytic	13.00	12.50	12.70
Casting	12.75	12.00	12.50
TIN	32.35	31.30	31.75
LEAD	4.15	4.00	4.05
SPELTER	4.70	4.65	4.68
ANTIMONY (Halletts)	8.75	8.50	8.65

See Advertising Pages 21 and 22 Following for Trade Wants

Metal Prices, May 18, 1908

NEW METALS.

Price per lb.

COPPER, PIG, BAR AND INGOT AND OLD COPPER.

Duty Free. Manufactured $2\frac{1}{2}$ c. per lb.

Lake, car load lots.....	\$12.80
Electrolytic, car load lots.....	12.70
Castings, car load lots.....	12.50

TIN—Duty Free.

Straits of Malacca, car load lots.....	30.50
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LEAD—Duty Pigs, Bars and Old $2\frac{1}{2}$ c. per lb., pipe and sheets $2\frac{1}{2}$ c. per lb.

Pig lead, car load lots.....	4.25
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SPELTER—Duty $1\frac{1}{2}$ c. per lb.

Western, car load lots.....	4.75
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ALUMINUM—Duty Crude, 8c. per lb. Plates, sheets, bars and rods 13c. per lb.

Small lots.....	35.00
100 lb. lots.....	34.00
Ton lots.....	33.00

ANTIMONY—Duty $\frac{3}{4}$ c. per lb.

Cookson's, cask lots, nominal.....	8.75
Halletts, cask lots.....	8.50
Other, cask lots.....	7.75

NICKEL—Duty 6c. per lb.

Shot, Plaquettes, Ingots, Blocks, according to quantity.....	45 to .60
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MANGANESE—Duty 20%.....

.80

MAGNESIUM—Duty Free.....

\$.140

BISMUTH—Duty Free.....

1.80

CADMIUM—Duty Free.....

1.40

Price per oz.

GOLD—Duty Free.....

\$20.67

SILVER—Duty Free.....

.52 $\frac{1}{2}$

PLATINUM—Duty Free.....

23.25

QUICKSILVER—Duty 7c. per lb. Price per pound.....

63c. to 64c.

OLD METALS.

Price per lb.

Heavy Cut Copper.....	10.50	11.00
Copper Wire.....	10.00	10.50
Light Copper.....	9.00	9.50
Heavy Mach. Comp.....	10.00	10.50
Heavy Brass.....	8.00	8.50
Light Brass.....	6.00	6.25
No. 1 Yellow Brass Turnings.....	7.00	7.50
No. 1 Comp. Turnings.....	8.00	8.50
Heavy Lead.....	3.50	3.60
Zinc Scrap.....	3.00	3.50
Scrap Aluminum, turnings.....	6.50	7.00
Scrap Aluminum, cast, alloyed.....	16.00	18.00
Scrap Aluminum, sheet (new).....	18.00	19.00
Old Nickel, solid.....	20.00	25.00
No. 1 Pewter.....	18.00	19.00

INGOT METALS.

Price per lb.

Silicon Copper.....according to quantity	33 to 38
Phosphor Copper, 5%.....	" " 19 to 21
Phosphor Copper, 10% to 15%.....	" " 28 to 30
Guaranteed.....	" " 34 to 36
Phosphor Tin.....	" " 10 to 11
Brass Ingot, Yellow.....	" " 12 to 14
Brass Ingot, Red.....	" " 11 to 13
Bronze Ingot.....	" " 14 to 17
Manganese Bronze.....	" " 13 to 16
Phosphor Bronze.....	" " 29 to 35
Casting Aluminum Alloys.....	" " 30 to 40

PHOSPHORUS—Duty 18c. per lb.

According to quantity.....

PRICES OF HOT ROLLED SHEET COPPER.

SIZES OF SHEETS.

64 oz. and over 50 lb. sheet 30 x 60 and heavier.	32 oz. to 64 oz. 25 to 50 lb. sheet 30 x 60.	24 oz. to 32 oz. 18 $\frac{1}{2}$ to 25 lb. sheet 30 x 60.	16 oz. to 24 oz. 12 $\frac{1}{2}$ to 18 $\frac{1}{2}$ lb. sheet 30 x 60.	14 oz. and 15 oz. 11 to 12 $\frac{1}{2}$ lb. sheet 30 x 60.	12 oz. and 13 oz. 9 $\frac{1}{2}$ to 11 lb. sheet 30 x 60.	10 oz. and 11 oz. 7 $\frac{1}{2}$ to 9 $\frac{1}{2}$ lb. sheet 30 x 60.	8 oz. and 9 oz. 6 $\frac{1}{2}$ to 7 $\frac{1}{2}$ lb. sheet 30 x 60.	Lighter than 8 oz.
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CENTS PER POUND.

Not longer than 72 inches.	17	17	17	17	18	19	20	23	26
Longer than 72 inches.	17	17	17	17	18	20	23	26	
Not longer than 96 inches.	17	17	17	17	19	23			
Longer than 96 inches.	17	17	17	17	19	21	24	27	
Not longer than 72 inches.	17	17	17	17	19	23	26		
Longer than 72 inches.	17	17	17	17	19	23	26		
Not longer than 96 inches.	17	17	17	18	20				
Longer than 96 inches.	17	17	17	18	20				
Not longer than 120 inches.	17	17	18	19					
Longer than 120 inches.	17	17	18	19	21	24	27		
Not longer than 72 inches.	17	17	18	20	22	25			
Longer than 72 inches.	17	17	19	21	25				
Not longer than 96 inches.	17	18	20	23					
Longer than 96 inches.	17	18	20	23					
Not longer than 120 inches.	17	17	19	21	26				
Longer than 120 inches.	18	19	21	25					
Not longer than 96 inches.	17	18	20	25					
Longer than 96 inches.	17	19	22	27					
Not longer than 120 inches.	18	20	25						
Longer than 120 inches.	18	20	23						
Not longer than 96 inches.	19	21	24						
Longer than 96 inches.	20	22	26						
Not longer than 132 inches.	21	23							
Longer than 132 inches.	22	25							

Roller Round Copper, $\frac{3}{4}$ inch diameter or over 17 cents per pound. (Cold Drawn, Square and Special Shapes, extra.)

Circles, Segments and Pattern Sheets three (3) cents per pound advance over prices of Sheet Copper required to cut them from.

All Cold or Hard Rolled Copper, 14 ounces per square foot and heavier, one (1) cent per pound over the foregoing prices.

All Cold or Hard Rolled Copper, lighter than 14 ounces per square foot, two (2) cents per pound over the foregoing prices.

Cold Rolled and Annealed Copper, Sheets and Circles, take the same price as Cold or Hard Rolled Copper of corresponding dimensions and thickness.

All Polished Copper, 20 inches wide and under, one (1) cent per pound advance over the price for Cold Rolled Copper.

All Polished Copper, 20 inches wide, two (2) cents per pound advance over the price for Cold Rolled Copper.

Planished Copper, one (1) cent per pound more than Polished Copper.

Cold Rolled Copper prepared suitable for polishing, same prices and extras as Polished Copper.

Tinning Sheets, on one side, $3\frac{1}{2}$ c. per square foot.

For tinning both sides, double the above price.

For tinning the edge of sheets, one or both sides, price shall be the same as for tinning all of one side of the specified sheet.

COPPER BOTTOMS, PITS AND FLATS.

14 oz. to square foot and heavier, per lb.....	21c.
12 oz. and up to 14 oz. to square foot, per lb.....	22c.
10 oz. and up to 12 oz.	24c.
Lighter than 10 oz.	27c.
Circles less than 8 in. dia., 2c. per lb. additional.	
Circles over 13 in. dia. are not classed as Copper Bottoms.	
Polished Copper Bottoms and Flats, 1c. per lb. extra.	

ZINC—Duty, sheet, 2c. per lb.

Price per lb.

600 lb. casks.....	7.50
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AN EXCHANGE FOR THE WANTS OF THE METAL TRADES.

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METALS, MACHINERY AND SUPPLIES FOR SALE

FOR SALE—AT BARGAIN RATES

ROLLING MILLS, POLISHING HEADS and all kinds of machinery required by SILVERSMITHS and MANUFACTURERS JEWELERS. We carry a general line and render prompt shipment.

THOMAS McWILLIAMS, 237 Eddy Street, PROVIDENCE, R. I.

We have for sale a

SECOND HAND PLATING DYNAMO

on account of same being too small for our work:

One 6 volt Card Machine rated at 700 amperes, cost \$350.00, new, 8 years ago for sale at \$80.00

F. O. B. PERU, ILL.

AMERICAN NICKELOID & MFG. CO., - Peru, Ill.

FOR SALE—A PHOENIX PLATING DYNAMO; 6 volts, 3,000 amperes; direct connected to 33 H. P. 230 volt direct current motor; in good working condition. Address BOX W., care THE METAL INDUSTRY.

GAS ENGINE—One almost new 12 H. P. Watkins gas engine; in best order; used one year; will sell 40% below cost. Address NUNNER & ASHTON, Cincinnati, O.

FOR SALE—Two tanks, 8 x 2 x 18. Also one BLOWER and other EQUIPMENT for a PLATING PLANT. Will sell very reasonable. For further particulars address LOUIS HAACK, care The Gramercy Brass & Iron Works, 206 E. 19th street, New York City.

FOR SALE—POLISHING AND PLATING OUTFIT COMPLETE. For particulars address DELAWARE PLATING COMPANY, 517 East Third street, Wilmington, Del.

FOR SALE—BRASS FOUNDRY IN GOOD LOCATION. Has a steady run of orders. Good chance for practical man. Address F-1, care THE METAL INDUSTRY.

FOR SALE—AT A SACRIFICE, A BRICK FOUNDRY FACTORY with all of the machinery for smelting. Located at Utica, N. Y. For further information inquire of SAMUEL ELLIS, 322 Canal street, New York City.

FOR SALE—THE COLUMBIA HAND PROTECTOR. A device which saves the fingers of pattern makers and avoids accidents. Further particulars furnished for the asking. Address F-2, care THE METAL INDUSTRY.

FOR SALE—ONE 275 STEELE-HARVEY FURNACE, in perfect condition. Will sell cheap. For further particulars address Box 1, care THE METAL INDUSTRY.

FOR SALE—A lot of new SHEET BRASS and ALUMINUM at a bargain. WALSH'S SONS & CO., Newark, N. J.

FOR SALE—IMPROVED DRILL CHUCKS that are needed in every METAL WORKING SHOP. Address DRILL CHUCK, care THE METAL INDUSTRY.

FOR SALE—LATHES and DRILL CHUCKS, Face Plate Jaws, Centering Chucks, Planer Chucks, etc. Immediate shipment guaranteed. Address LATHE CHUCK, care THE METAL INDUSTRY.

FOR SALE—Prompt Shipment. DROP PRESSES and AUTOMATIC DROP LIFTER to suit all requirements. Address DROP, care THE METAL INDUSTRY.

WANTED—A second hand 14 POT FURNACE. Address BOX A-6, care THE METAL INDUSTRY.

METALS, MACHINERY AND SUPPLIES WANTED

WANTED

FLAT ROLLING MILL

About 8-inch face. Second hand preferred in good condition.

Address Box A-3, care of THE METAL INDUSTRY

METALS, MACHINERY AND SUPPLIES WANTED—Contd

WANTED

50,000 lbs. Ingot Copper, Heavy Copper and Composition

Quote lowest cash price. 75 per cent. against Bill of Lading and balance after examination of stock.

Address A-4, care of THE METAL INDUSTRY

We PAY CASH for GOLD, SILVER and PLATINUM SCRAPS, SOLUTIONS and SWEEPINGS; Old Nickel Anodes, New or Old Mercury, Bismuth, Gas Mantle Dust and Chemicals, etc. EMPIRE CHEMICAL WORKS, 416 East 52d street, New York City.

WANTED—16,000 pounds of MAGNOLIA METAL at 15 cents per pound. Address MAGNOLIA, care THE METAL INDUSTRY.

CASH PAID for old precious metals and minerals in any form. Gas mantle dust, bronze powder, bismuth, platinum, mercury, nickel, etc. Address JOSEF RANDAL, 36 Fulton street, New York City.

WANTED—METALS and WASTE of all kinds. Address WALSH'S SONS & CO., Newark, N. J.

OPPORTUNITIES

HARDENING TOOL STEEL to DIAMOND cutting edge, but tough inside, is an art. Positive guarantee against cracks or warping. Used and endorsed by world's foremost experts. Free information. CHEMICAL PRODUCTS CO., Rogers Park, Chicago, Ill.

WANTED—Concerns handling Platers' and Publishers' Supplies to represent a large manufacturing concern of ALKALIS. Address with full particulars, territories covered and number of men selling goods. Address ALKALI, F-7, care THE METAL INDUSTRY.

J. P. FANNING, Machinist, 78 Jefferson Avenue, Brooklyn, N. Y.—Maker of Moulds for Casting Solder, Babbitt Metal, Bar Lead, etc. We also manufacture small work. Write for particulars.

WANTED—Reliable parties to canvass for subscriptions to THE METAL INDUSTRY. Liberal commission. For further particulars address THE METAL INDUSTRY, 61 Beekman street, New York.

GOOD SALES, GOOD EQUIPMENT, GOOD ASSISTANTS and GOOD POSITIONS may be obtained by the insertion of a METAL INDUSTRY WANT.

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Inquiries received by THE METAL INDUSTRY for Metals, Machinery and Supplies. Further particulars may be obtained by addressing the inquiry number, care THE METAL INDUSTRY.

INQUIRY No. 1.—Address of manufacturer of "Torrey Babbitt Metal."

INQUIRY No. 2.—To correspond with manufacturers of zinc tubing.

INQUIRY No. 3.—Address of manufacturers of embossing presses for making pattern letters and figures.

INQUIRY No. 4.—Address of manufacturers of blanks for making knives, forks, spoons, etc.

INQUIRY No. 5.—Address of manufacturers of platers' compound and heelball.

INQUIRY No. 6.—Address of manufacturers of machinery suitable for making iron fencing and wire weaving looms.

INQUIRY No. 7.—Address of manufacturer of Ajax Metal in ingot form.

INQUIRY No. 8.—Address of manufacturers of saws for light metal goods work.

SITUATIONS OPEN

WANTED—A man to buy and sell metals for a firm just starting. For further particulars address J. S. F., care THE METAL INDUSTRY.

WANTED—To correspond with some high-class salesmen calling on the large FOUNDRY trade throughout different parts of the country who could handle our LUMBER on a commission basis as a side line. For further particulars address LUMBER, care THE METAL INDUSTRY.

WANTED—A first-class SILVER PLATER, familiar with all its branches. For further particulars address TAP, care THE METAL INDUSTRY.

WANTED—GALVANIZER. Young man to take charge of small shop, coating small castings, bolts, etc. Must understand economical handling of men and materials and be up to date in the business. Address BOX A-13, care THE METAL INDUSTRY.

WANTED—FIRST CLASS PLATER. One who has a sufficient knowledge of CHEMISTRY to match special finishes, such as are required in builders' hardware. Address HARDWARE, care THE METAL INDUSTRY.

WANTED—A capable ENGINEER to take charge of the mechanical production in a large BRASS and COPPER ROLLING MILL. Must understand the designing of machinery and possess full knowledge of all the latest improvements in rolling mill equipment. Must also understand the hiring and handling of help. Give full information as to practical experience. Reply R. M. C., care THE METAL INDUSTRY.



TRADE WANTS



AN EXCHANGE FOR THE WANTS OF THE METAL TRADES.

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SITUATIONS WANTED

Advertisements under this head will be inserted for 20 cents per line, 3 lines for Half a Dollar.

SITUATION WANTED—By a PLATER who is thoroughly familiar with GOLD, SILVER and all finishes. Have had experience in deposit work. Married man, 38 years of age. Address GOLD, care THE METAL INDUSTRY.

SITUATION WANTED—By a PLATER and CHEMIST of wide experience. Up-to-date methods in making all solutions and finishes. Also thoroughly competent at deposit work in all its branches. Address BOX A-11, care THE METAL INDUSTRY.

SITUATION WANTED by electro-plater who has had several years' experience in a general line of plating and can furnish best of reference. Address GENERAL, care THE METAL INDUSTRY.

SITUATION WANTED—By a PATTERN MAKER who is an expert at the business, with inventive ideas. Well versed in all branches. Address W. McE., care THE METAL INDUSTRY.

SITUATION WANTED—By FOREMAN of a Polishing and Plating Department, on jobbing, brass bed, chandelier and stove work. Thoroughly understands this work. Address J. M., care THE METAL INDUSTRY.

SITUATION WANTED—By a first class Plater, Polisher and Buffer with 20 years' experience. Understands the mixing of all solutions and can produce all colors. Address N. Y., care THE METAL INDUSTRY.

SITUATION WANTED—As foreman of a Plating Department. Am a first class plater, polisher and lacquer, and can produce all kinds of finishes. Address A. M., care THE METAL INDUSTRY.

SITUATION WANTED—By a plater of 21 years of experience, familiar with all finishes, solutions, etc. Also understands polishing and buffing, and can furnish the best of references. Address A. N. Y., care THE METAL INDUSTRY.

SITUATION WANTED—By a BRASS MAN, thoroughly experienced in the manufacture and sale of both steam and plumbing lines. Experience covers 13 years as factory Manager and as Salesman. For further particulars address A. H. H., care THE METAL INDUSTRY.

SITUATION WANTED—By a BRASS FOUNDRY FOREMAN with 20 years experience. Expert on Brass, Bronze and Aluminum Castings. Can furnish best of references. Address M. M., care THE METAL INDUSTRY.

SITUATION WANTED—By a FINISHING STRIP ROLLER at present employed in a Copper Mill. Have a general knowledge of the copper business. Address STRIP ROLLER, care THE METAL INDUSTRY.

SITUATION WANTED—By a First Class Plater with several years experience. Can furnish the best of references. Address A. J. H., care THE METAL INDUSTRY.

SITUATION WANTED—By a plater who is an expert on brass solutions and thoroughly familiar with the plating of hard and soft metals. Address B. C. D., care THE METAL INDUSTRY.

SITUATION WANTED—By a first class plater with 14 years experience, who is a thorough mixer of all solutions. Address M. O. R., care THE METAL INDUSTRY.

SITUATION WANTED—By a thoroughly practical plater with 15 years experience. Familiar with all solutions and all metals. Can furnish the best of reference. Address R. E. J., care THE METAL INDUSTRY.

SITUATION WANTED—By a PLATER who is a sober, honest and industrious man. Position in New York, New Jersey or Canada preferred. Am capable of taking charge, and can furnish the best of references. Address BOX A-9, care THE METAL INDUSTRY.

SITUATION WANTED—By a BRASS FOUNDRY FOREMAN. Thoroughly familiar with all mixtures, and can furnish the best of references. Address BOX A-10, care THE METAL INDUSTRY.

SITUATION WANTED—By a PLATER of wide experience. Up-to-date methods in making all solutions and finishes. Also thoroughly competent at deposit work in all its branches. Address BOX A-11, care THE METAL INDUSTRY.

SITUATION WANTED—By FOREMAN ELECTRO-PLATER, with wide experience in plating Gold, Silver, Nickel, Brass, Bronze and Copper on all metals, including Barrel Plating. Can instal plants. Address R. F. C., care THE METAL INDUSTRY.

SITUATIONS WANTED—Contd.

SITUATION WANTED—Position as MODELER or WAX WORKER or PLASTER and Glue CASTER. Can also do Plaster Carving and Wood Carving. Well versed in undercut work. Can furnish the best of references. Address MODELER, care THE METAL INDUSTRY.

SITUATION WANTED—By ELECTRO-PLATER with up-to-date methods, resulting in extreme economy as to labor and superior finish. Would like to take position at once, can demonstrate and give satisfactory reference. Address ELECTRO-PLATER, care THE METAL INDUSTRY.

SITUATION WANTED—Position as Foundry Foreman or Superintendent in brass. Have had twenty years' experience and can give the best of references. Do my own mixing. Address F. B. M., care THE METAL INDUSTRY.

SITUATION WANTED—PLATER, up to to date in ormolu gold, silver, nickel, brass, cyanide and acid copper, verde greens, oxidizing and finishing in every class of metal. Capable of taking charge of job shop or large firm, having 20 years' experience. Wish to go West (California). Address T. H. J., care THE METAL INDUSTRY.

SITUATION WANTED—By FIRST CLASS PLATER AND POLISHER. Has had 16 years' experience and had charge of men for the last 10 years. Can handle any kind of a plant, understands all finishes and can give good reference. Address F-6, care THE METAL INDUSTRY.

SITUATION WANTED—By PLATER thoroughly conversant with Bronze, Brass, Copper and Nickel Plating, their oxidizes and finishes. Can furnish best of references. Address BOX NO. 6, care THE METAL INDUSTRY.

SITUATION WANTED—By PLATER with 28 years' experience in all metals, including platinum. Should be glad to hear from firms desiring the services of a first class plater. Address BOX NO. 8, care THE METAL INDUSTRY.

SITUATION WANTED—Position as DESIGNER in Sterling Silver. Have had 15 years' experience with leading manufacturers. Understands also etching and modeling. Address DESIGNER, care THE METAL INDUSTRY.

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Sheet Metals that save cost in manufacturing and do not rust

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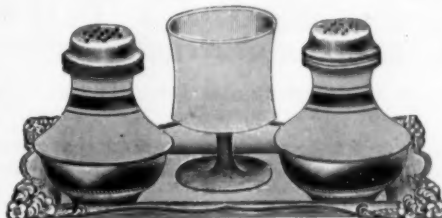
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Seymour Mfg. Co., Seymour, Ct.
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Taunton-New Bedford Copper Co., New Bedford, Mass.
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Waterbury Brass Co., Waterbury, Conn.
Wells, A. H., & Co., Waterbury, Conn.

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Lovell, F. H., & Co., Arlington, N. J.
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Lester, E. F., Co., Fayetteville, N. Y.
Lewis, Ernest A., Birmingham, England.
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Newton, E. B., Newark, N. J.
Peck, F. J., & Co., Cleveland, O.
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CASTINGS UP TO 20,000 POUNDS IN WEIGHT.

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We Can Save You Money on
SILVER-SOLDER

(FOR BRAZING, ETC.)

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Syracuse Smelting Works

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SHIELD BRAND PHOSPHOR TIN

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ASK FOR BOOKLET B2

New York, N. Y. Montreal, Can.

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 Copper**

Two Qualities
 10 or 15 %
 Phosphorus
 Guaranteed

☞ This deoxidizer has been thoroughly tested and pronounced A1.

☞ The percentage of phosphorus contained is either 10% or 15%, no more, no less. If applied to the same composition results will always be the same. No blow holes and pinholes. No castings for the scrap heap.

ROYAL MANGANESE COPPER
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and other alloys

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R. F. LANG

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**BRASS, BRONZE
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We Can Deliver
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The Rostand Mfg. Co.

MILFORD, CONN.

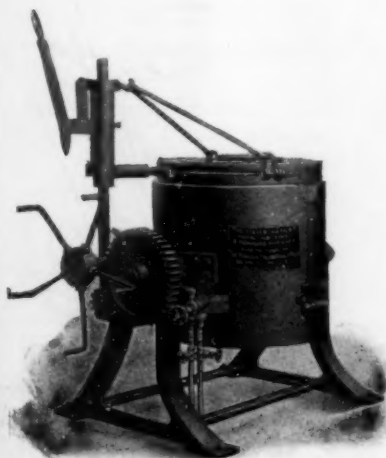
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Once again we say, "Throw out the old, dirty metal-losing **COKE PIT FURNACES**." Why, friends, consider, even if your coke costs nothing, we will save you money in fuel, crucibles and sundry foundry expenses. The "Trial on Approval" tells the story. Now consider

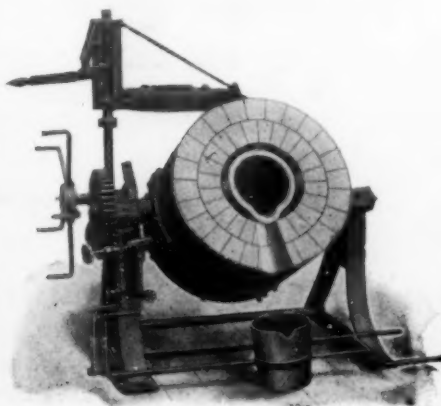
The "STEELE-HARVEY" Crucible Tilting Melting Furnace

of which we are the originators and pioneer manufacturers.

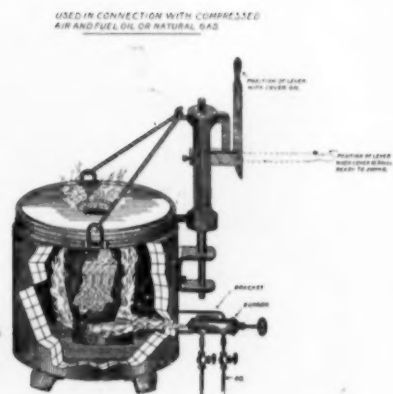
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Melting position.



Pouring Position.



Non-Tilting Furnace.

Our references and installations and duplication of orders for the past five years "tells the tale." Investigate now, while conditions permit. Order one furnace of capacities from 100 to 1,200 lbs. Advise your class of work; will arrange for quick shipment and prompt operation by our representative.

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Works, Curtis Bay, Md.

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CASTINGS UP TO 20,000 POUNDS IN WEIGHT.

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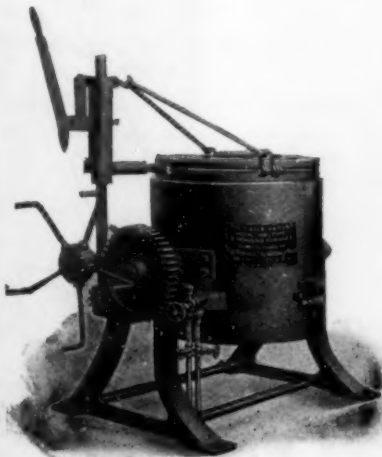
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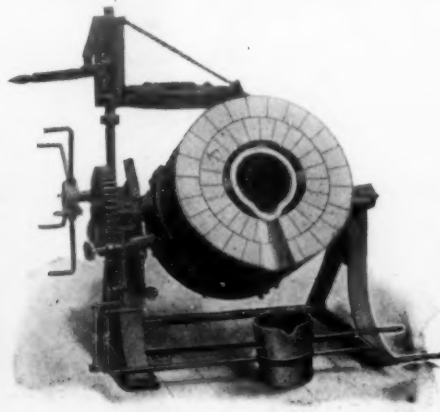
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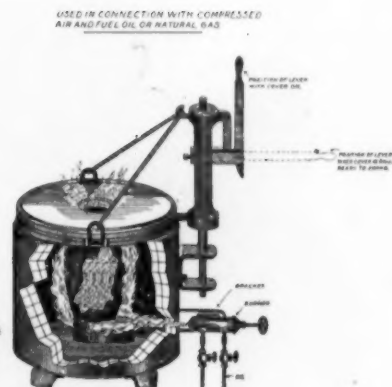
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Furnaces for every purpose

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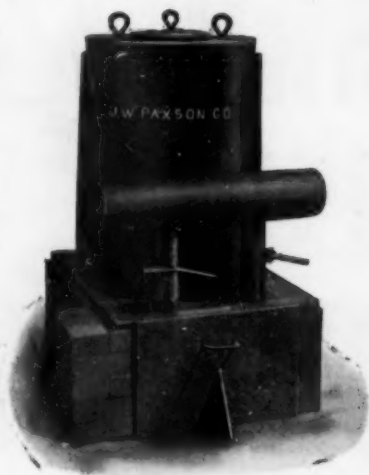


Fig. 621
Forced Draft Furnace



Fig. 622
Natural Draft Furnace
"SQUARE"



Fig. 623
Natural Draft Furnace
"ROUND"
Also made with drop-grate,
and with closed bottom to be
used with forced draft



Fig. 209
Sprue Cutters. All Sizes

Magnetic Separators

We are now manu-
facturing these sepa-
rators for separating
metal turnings.

HAND OR BELT DRIVEN

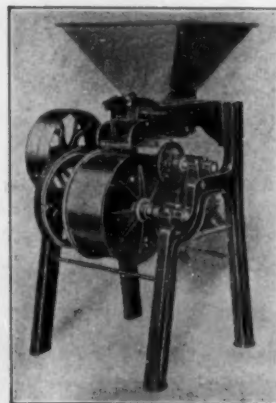


Fig. 76
The Paxson-Sawyer
Magnetic Separator

J. W. PAXSON CO., PHILADELPHIA

F. S. GARRETT, PRESIDENT.

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The officers and employees of this company have been connected for quite a number of years with the Rockwell Engineering Company, of this City, and it will be our aim to follow the high standard of excellence in furnace construction, maintained by that company.

We would be pleased to receive your inquiries for anything in our line, and promise you most prompt and careful attention.

Yours very truly,

ROCKWELL FURNACE COMPANY.

W.S. Quigley
Gen. Mgr.

P.S.

Please look over the list of furnaces we make Q.

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BILLET HEATING
BOLT HEATING
BRAZING
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CREMATING
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GALVANIZING
HEATING
HARDENING
JAPANESE
LADLE HEATING
METAL MELTING
MUFFLES
MOLTEN BATHS
PORTABLE HEATERS
RIVET HEATING
REFINING
REGENERATIVE
SCRAP MELTING
SHRINKING
SPRING TEMPERING
SAW HARDENING
SMELTING
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VARNISH BOILING
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MANGANESE DI-OXIDE?

**Some of the Brass people
buy it in carload lots. Let
us tell you why. ♣ ♣ ♣**

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WE HAVE OTHER GOOD THINGS FOR THE BRASS FOUNDRY

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is Sheet Zinc coated with polished Nickel perfectly alloyed to same.

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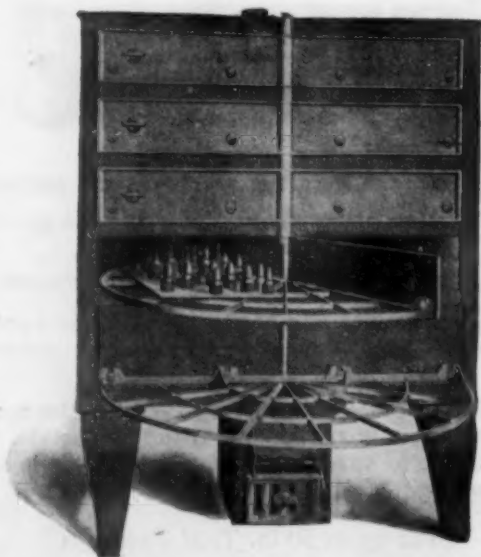
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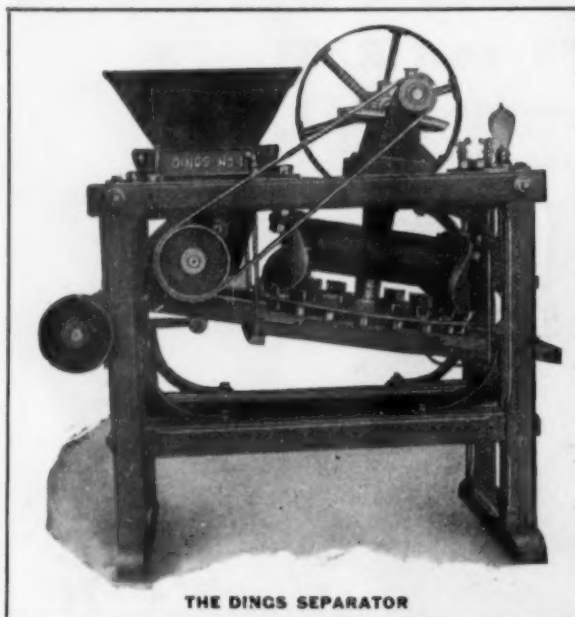
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All sizes and for all purposes.

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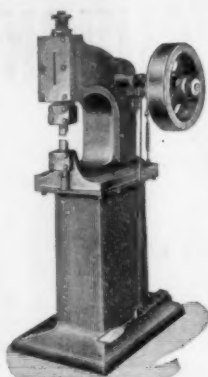
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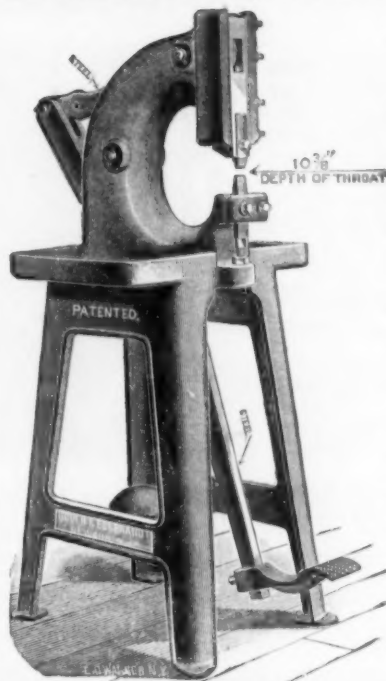
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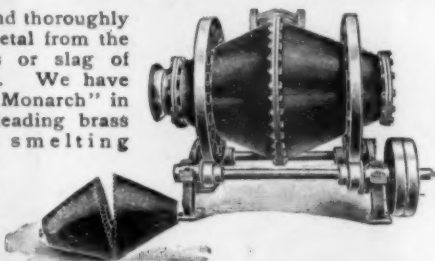
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Highest grades of basic brick and special shapes for lining metallurgical furnaces

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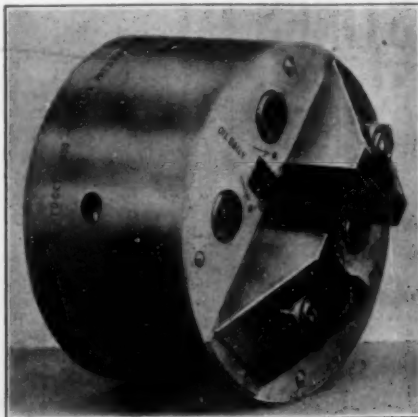
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It appears to be like any ordinary box chuck, but in action is far different. It will grip and release any piece in three seconds. Will hold any shaped rod or tube up to $\frac{7}{8}$ " diameter. Castings varying in diameter $\frac{1}{8}$ " can be gripped as readily as those which are of uniform size, without any readjustment of the chuck.

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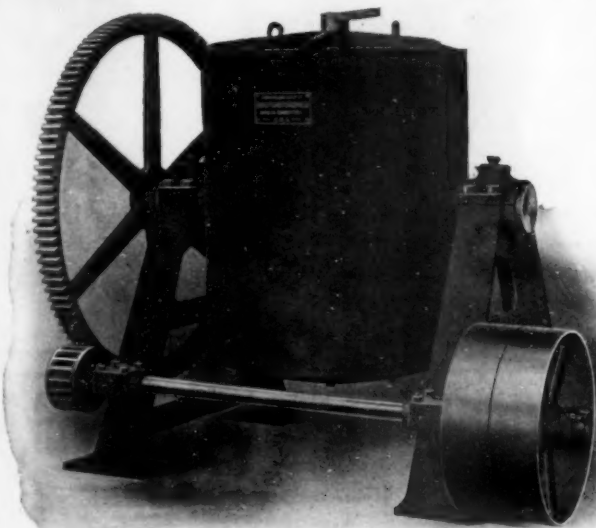
SOME OF THE PIECES BEING CHUCKED IN THE TIME GIVEN

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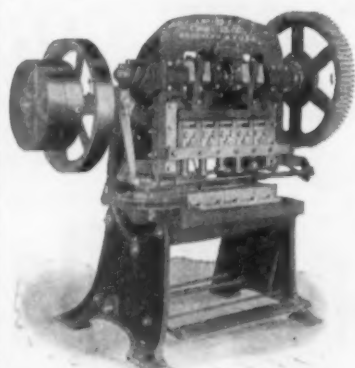
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FOR INDEX TO ADVERTISEMENTS SEE PAGE 36



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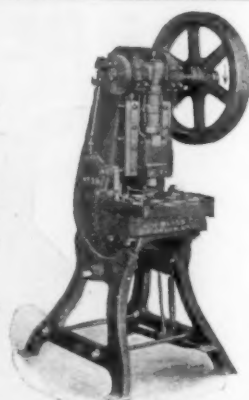
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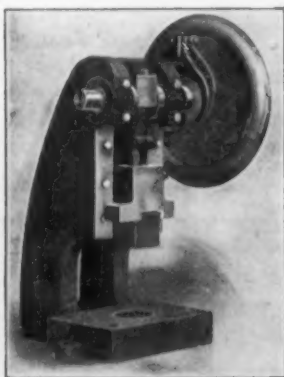
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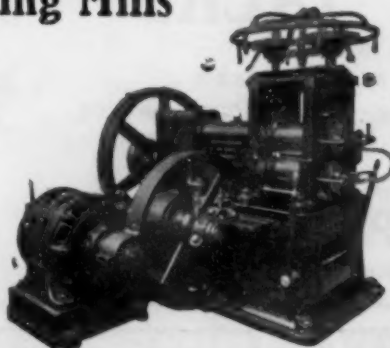
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For rolling strips of iron, steel, brass, copper, etc.

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It is safe.
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Only takes 5 seconds.

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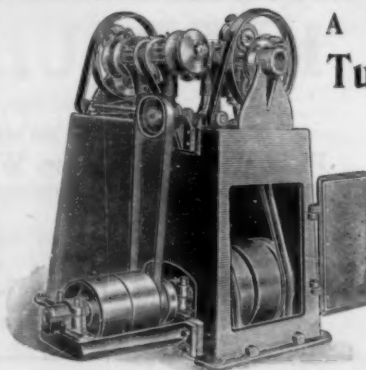
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Will polish all lengths of tubes
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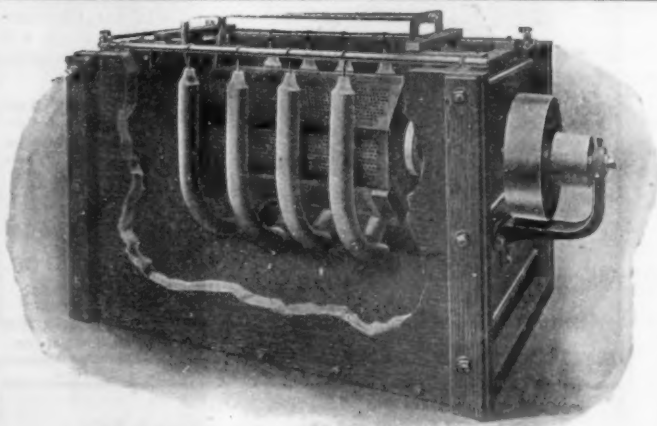
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And lose dollars in the efficiency of your shop.

CARBORUNDUM GRINDING WHEELS

cost a little more in the first place--but do two
or three times as much work in a day--and
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We will finish sample lots of work without charge.

This apparatus is a proved money saver where small
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No Stringing. No Wire Used. No Metal Plating
Trays or Baskets. No Unstringing. No Loss of Metal.

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Basket can be removed at will—without interfering
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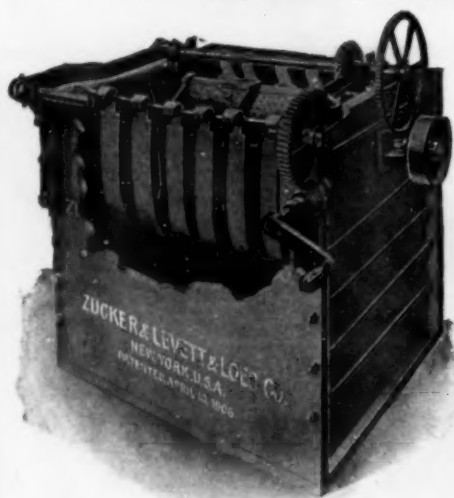
Manufacturers of Dynamos from 50 to 5,000 Ampere Capacity, and all Supplies for Electro-deposition.

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All sorts of small work, such as nuts, bolts, screws, etc., can be economically and quickly Plated and Finished at one operation, labor of stringing also being done away with. The apparatus is fitted with a Crank and Gear by which the cylinder can be raised out of the solution to receive or discharge work. We make for this apparatus special curved anodes so that the anode surface is at all points equidistant from the work.



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Electro-galvanizing Outfits Without Royalty on Solution. Low Voltage Generators; and Direct Connected Generator Sets, 50 to 10,000 Amperes Capacity. Complete Plants Installed and All Supplies for Electro Plating and Polishing.

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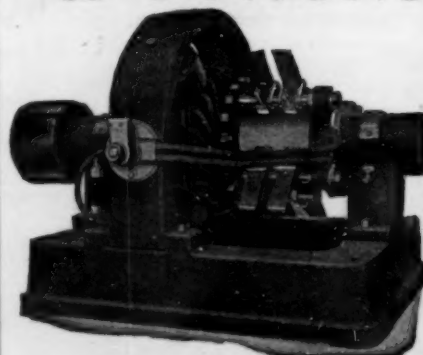
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For Electro-Plating, Galvanizing and all other low voltage work.

50-8000 Amperes, 3-30 Volts. Shunt, compound and separately excited.

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No. 20 Double Arbor Polishing and Buffing Lathe

Can be belted from overhead shaft or from shaft below floor

The two independent arbors permit two workmen on the same machine to be independent of each other. One may stop to change his wheel or for any other purpose, while the other continues his work. This feature contributes to a great saving of time. Built for polishing or buffing large work and is especially adapted for stove manufacturers. Each spindle is provided with tight and loose pulleys and can be run direct from main or jack shaft. The loose pulleys are one inch less in diameter than tight pulleys, which tend to relieve the strain on belt and bearings when belt is run on loose pulleys. Loose pulleys are also provided with patent oiling device which assures positive lubrication and prevents heating or binding on the shaft.

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Complete Electro-Plating Outfits
Polishing and Buffing Materials
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This illustration shows the Lathe to run from overhead shaft

Ring Oilers in each of the out side bearings

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V. & L. Patent Separator, Hood and Metal Saving Device

HUNDREDS OF THEM IN USE
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Patent Separator

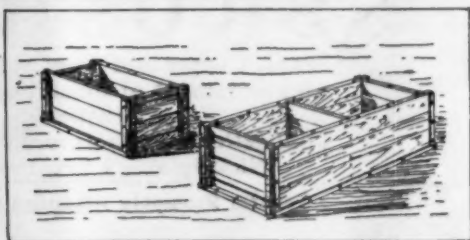


Patent Hood and Metal Saving Device

Save Money

The hood and metal saving device for polishing or grinding wheels can be attached easily to machine and saves from 5 to 20 lbs. of metal per day.

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Electro-Plating Tanks
A SPECIALTY

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GOLD MEDAL AT JAMESTOWN

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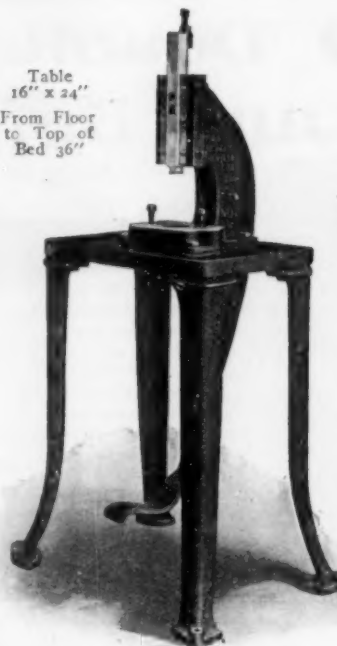
Globe Machine & Stamping Co.

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16" x 24"
From Floor
to Top of
Bed 36"



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Pendulum Foot Press.

† This press enables one to do more and better work with less strain and fatigue than other presses. † That's because the Pendulum Lever is made to conform to the free, easy, natural movement of the foot. † Sent on trial to responsible parties.

Circular B 2
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THE BAIRD MACHINE CO.

OAKVILLE, CONN., U. S. A.

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FOR TWELVE YEARS

we have been manufacturing a high-grade Acid-Proof Vitrified Non-Absorbent Brick suitable for Acid Tanks, Plating Room flooring, etc., etc.

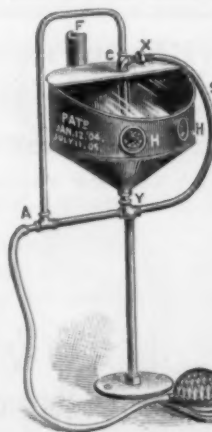
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Price, \$20.00. Foot Bellows \$6.00.
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Made of heavy Galvanized Sheet
Iron, 12 inches diameter, Glass Top,
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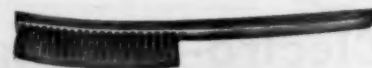


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When you have put hard earned dollars into finish that has cost you much time and labor, why try to save a few cents on the lacquer that preserves it?

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are the outgrowth of many successful experiments continued through years, whose results have been proved and tested at our expense. You save the cost of experiments when you buy Barrett's.

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ENDLESS SEWED POLISHING BELTS

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SEE PAGE 36

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IF YOU ARE STILL APPLYING YOUR PAINT, JAPAN, ENAMEL, LACQUER, BRONZE, VARNISH, ETC., BY BRUSH, YOU HAVE LOST

\$1,000.00

FROM EVERY \$2,000.00 YOU HAVE PAID OUT IN LABOR, UNDER OLD METHODS.

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WE HAVE DONE IT FOR OTHERS WITH **THE AIR BRUSH**

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Users favor them because they have found them the safest.

Their use insures the most lasting finish, the easiest application and the least expense.

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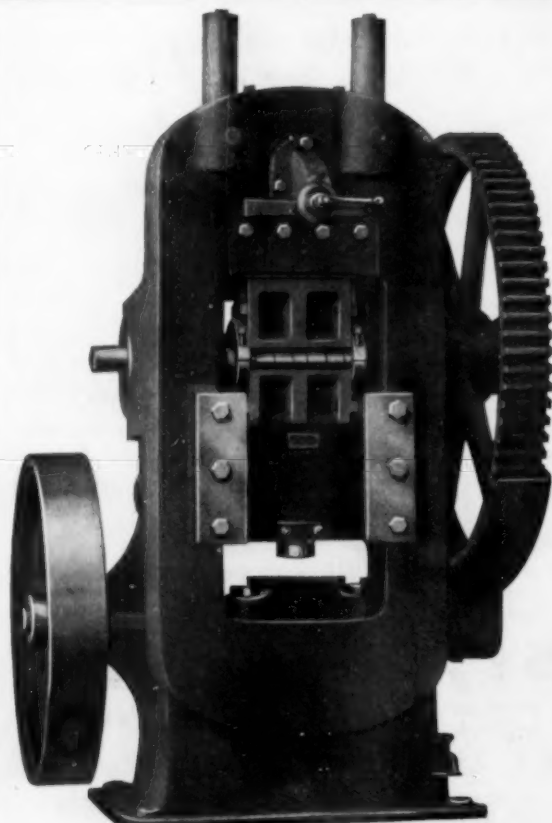
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Any width or thickness made to order on short notice and large stock always on hand.

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PHILADELPHIA PA.



440-Ton Knuckle-Joint Press

Write for Circular 5K, which gives complete specifications of our

440-TON KNUCKLE-JOINT PRESS

It has a cast steel frame and is designed for embossing medals, emblems and similar work requiring a pressure up to 440 tons. (This rated capacity, by actual comparison with hydraulic test, is conservative.)

The knuckle-joints are tool-steel pins, hardened and ground, and of ample diameter to withstand the stated pressure with ease.

The gate is adjusted at the front by means of wedge and screw and the index dial used in connection with the adjustment is graduated to thousandths of an inch.

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Rub it on your wheel; costs less than tallow; besides the softening effect on the leather, it has the cutting quality, too. There you have an advantage; not one, but two. That’s the STEVENS SYSTEM. Same saving system when you use our new

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This gives the regular looking-glass finish; for stove trimmings or nickel plate use on Spanish Felt or Cotton Buffs; for brass use on Cotton Buffs; for brass bedsteads on Canton Flannel Buffs. Then you have the extra high finish you have looked for. See yourself in it every time. No, nothing else on the market like it. We’re in the lead all the time. Yes! we will ship promptly. Look for “STEVENS” on bottom of each cake; just now some others are copying our trade names. Yes, we make FOUNDRY FACINGS and SUPPLIES, BUFFING COMPOSITIONS and PLATERS’ SUPPLIES.

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